The Religious Pursuit of Race: Christianity, Modern Science, and the Perception of Human Difference

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Abstract

This dissertation is a work in intellectual history that chronicles racial theories within Western science and medicine. Therein, I address two interrelated questions. Firstly, has Christianity shaped modern scientific perceptions of race? Secondly, is the search for the origin of human life, vis-à-vis theories of race, a purely scientific matter or, a more basic human existential concern? To answer these questions I undertook archival research within the history of European and American racial science, analyzing contemporary scientific work, archival data of primary scientific material, biblical commentaries, literary monthlies, and early maps of the major continents. I argue that Christian ideas about nature, humanity, and history have facilitated modern scientific perceptions of race since the time of the Enlightenment. This is true despite what is believed to be the "Death of Adam" within Western science following the emergence of Darwinian evolution.

In defense of my thesis I trace the currency of three ideas derived from Christianity that have shaped the assumptions and reasoning styles of early modern and contemporary scientific theorists of race. These ideas are: common human descent (derived from the Biblical creation narrative), the ontological uniqueness of human life (drawn from Biblical claims about the "image of God" mirrored in "mankind"), and the longevity of racial traits (an idea that has its roots in theological claims about the stability and inherent order of nature). I chart the development of these three Christian concepts

across four different historical moments that reveal how religious and scientific perceptions of race share a common foundation in the West. These moment are: Johann Friedrich Blumenbach's attempt to develop anthropology as a secular science during the end of the eighteenth-century; mid-nineteenth-century debates in the U.S. over common human descent; early twentieth-century theories of race and disease that relied on polygenist assumptions about distinct human ancestry; and finally the recent discovery of Neanderthal DNA exclusively in the descendents of Eurasia. Ultimately, this thesis concludes that religious and scientific ways of viewing race have been interconnected and are animated by irresolvable questions about what it means to be human.

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Acknowledgements

New thoughts come into the world by passing through the ideas of others. I am indebted to the support of many individuals and institutions that helped make this possible.

I could not have completed my dissertation without the patience, encouragement, and thoughtful support of my committee. I am grateful for Janet Browne who gave me the intellectual space and confidence to bring together the connections I pursued over the course of this ambitious project. Her grace and mentorship were crucial for me as I worked my way through the history of science. I am indebted to Evelyn Higginbotham's encyclopedic understanding of race and American history, and her constant reminder not to loose sight of the politics of knowledge. I learned from Amy Hollywood the importance of being attentive to the multivalent expressions of religious thought—particularly in discourses about human difference. From Andrew Jewett I came to appreciate the virtue of sound historical argument and seeing how we carry the past into the present.

Beyond my immediate committee I am fortunate to have many important colleagues and friends who supported and encouraged me. I could not have wrapped my mind around the contemporary scientific literature on race without the help of Duana Fullwiley. She was a steady source of intellectual and moral support through many of the difficult moments one encounters while completing a dissertation. Noah Feldman's razor sharp intellect, lively exchange, and precise criticism pushed me to be a better scholar. I am grateful for Evelyn Hammonds and her commitment to my intellectual and

professional development. The insightful feedback of Elizabeth Lunbeck and Emily Martin were incredibly helpful as I began my research. I am also thankful for Eddie Glaude whose important work encouraged and freed me to push my scholarship on race and religion in a new direction. David Kim stirred me to be bold and creative in my scholarship on race. I am grateful also to Ronald Thiemann who was a thoughtful mentor and a strong supporter of my studies.

There are many close friends who discussed ideas, gave comments on chapters, attended talks, and most importantly were there for me. Thank you to Mara Willard, Chris Railey, Tara Dankel, Ernie Mitchell, Jason Jackson, Aziza Ahmed, Jonathan Kearney, and Adam Lobel. Special thanks to my brother Terell Keel who spent many hours helping me sharpen my writing. I am also grateful for Clarice Vollviler who often understood what I was after before I did, never stopped believing in me, and was a companion in life and in mind. Finally, my family deserves recognition for being a constant foundation of support and inspiration, most especially Jaelen and Carter.

My research would not have been possible without numerous sources of financial and institution support. Resources that allowed me to conduct research and write my dissertation came from the Social Science Research Council Dissertation Development Fellowship, the Charles Warren Center for American Studies at Harvard University, the Mark and Catherine Winkler Foundation, and the National Science Foundation Dissertation Improvement Grant Science, Technology and Society Division (SES-1027045). I am also grateful for the help provided to me by the staff at the American Philosophical Society and the Meharry Medical College library. Generous institutional support to share and develop my ideas came from the Harvard University North

American Religion Colloquium, the Incubator Series in the Department of the History of Science at Harvard, the Modern Sciences Working Group at Harvard University, and the Center for Science, Technology, Medicine, and Society at UC Berkeley.

Introduction

Can epistemology blandly ignore the fact that many scientific positions steadily developed from proto-ideas, which at the time were not based upon the type of proof considered valid today? This question should be reflected upon and investigated.[1]

Ludwig Fleck, *Genesis and Development of a Scientific Fact*

It is widely recognized that European and American natural history were shaped by Christian beliefs and theological ideas about human life and nature.[2] But with advancements in geological science, archeology, and the growing acceptance of evolutionary theory in the mid-nineteenth century it has also become conventional wisdom that modern science moved beyond the Christian heritage that was integral to the

[1] Ludwig Fleck, *Genesis and Development of a Scientific Fact*, (Chicago: The University of Chicago Press, 1981[1935]), pp. 24-25.

[2] John C. Greene makes this point in his discussion of the 17th century Christian patriarch of natural history John Ray. See, Greene's *The Death of Adam: Evolution and Its Impact on Western Thought* (Ames: Iowa State University Press, 1977) pp.1-12. Also see: Nancy R. Pearcey and Charles B. Thaxton, *The Soul of Science: Christian Faith and Natural Philosophy* (Wheaton: Crossway Books, 1994); Andrew Cunningham, "How Principia Got its Name; or, Taking Natural Philosophy Seriously," *History of Science* Vol. 29 (1991), pp. 377-392. I am aware, however, that not all historians hold the view that natural history was shaped by Christian thought. Edward Grant most vocally departs from this view in his opinion that it was the introduction of Aristotelian natural philosophy into the Western medieval universities during the twelfth century that profoundly shaped Christian thought, not the other way around. In his mind Christianity, and specifically natural theology, had but a minimal impact on the discipline of natural history. Grant's, position, however rests on a distinction between Christian faith and rationality, which I think is ultimately untenable, insofar as medieval Christianity was a highly rational discursive system well before the introduction of Aristotelian philosophy. This is evident in the work of the fourth century Christian philosopher St. Augustine of Hippo. This of course implies that as a rational system of thought, and not mere faith or belief, Christianity shaped and augmented the philosophical concepts it gained from Aristotle. A an example of this is St. Thomas Aquinas's *Summa Theologica* (1265-1274), which synthesized the philosophical frameworks of St. Augustine and Aristotle on issues such as the existence God, the nature of mankind, and the essence of the natural world. Furthermore, I side with the opinion of Andrew Cunningham who in a public debate with Grant argues that defining the discipline of natural history as a science is difficult given one's preconceived notions about what defines "science" and ultimately what characterizes the relationship between medieval science or the (early modern) science of natural philosophy and God (i.e., theology). For more on this debate see: Edward Grant, "God and Natural Philosophy: Late Middle ages and Sir Issac Newton" and Andrew Cunningham, "The Identity of Natural Philosophy: A Reply to Edward Grant" both in, *Early Science and Medicine* 2000, Vol. 5, No. 3, pp. 279-298.

study of natural history.[3] In this dissertation I re-examine both of these assumptions and consider how the religious foundations of Western science continued to be a part of the modern human sciences after natural history branched into various sub-disciplines. Over the course of four chapters I will retrace the history of the scientific study of race since the time of the Enlightenment. With this long view of history I will argue that theological presuppositions concerning the nature of the human races continued to shape modern scientific ideas about race even though explicitly religious claims about human origins had lost scientific legitimacy. This project shows how many late nineteenth and early twentieth century scientists (in their attempt to explain human heredity, racial admixture, and disease) drew upon eighteenth century ideas about the structure of nature and human life. These ideas—which were inspired by theological and biblically based presuppositions— assumed that racial distinctions were fixed, innate, and the outcome of a transcendent force (God/Nature).

Throughout this dissertation I use the term "religious" in a somewhat unconventional manner. My primary focus is not on religious institutions, practice or religious figures but rather on concepts and reasoning strategies that are associated with religious ideas about nature, humanity, and history. In other words, I am concerned with the relationship between religious epistemology and the philosophy of science. My intentions are to chart the residual presence of Christian ideas about the natural world on modern scientific and medical views of race. Therefore I have focused on historical

[3] See, John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought*; Peter Bowler, *Evolution: The History of an Idea* (Berkeley: University of California Press, 1983); Ronald Numbers, "Science without God: Natural Laws and Christian Beliefs" in, *When Science and Christianity Meet*, pp. 265-285.

moments where ideas derived from Christianity have shaped the assumptions and reasoning styles of early modern and contemporary scientific theorists of race since the Enlightenment. We will see this in each of the periods I cover, even though scientists in later, modern contexts often operated with ideas of human difference that were more complex than those of eighteenth century Christian naturalists. To be clear, my intentions are not to argue that modern scientific thinkers are inadvertently Christian given their views of race. Instead, I look to show how remnants of religious ideas have helped scientists and medical thinkers cast race in biological terms, even as they simultaneously succeed in maintaining norms of scientific objectivity.

The phenomenon of classifying humans according to their differences takes place at the intersection of a wide variety of knowledge practices.[4] Thus, an insightful study of human classification systems necessarily requires a broad theoretical apparatus and an attentive approach to empirical work. This project contends that many historians of science and social scientists have repeatedly downplayed or missed altogether the significance of religious ideas in the production of scientific notions of racial difference during the twentieth century. At the same time, scholars of religion have typically not thought of the dialogue between religion and science as a site for thinking about race. Interestingly, this oversight has taken place during a time when many in the humanities and the social sciences have been rethinking the boundaries of their respective fields and objects of study.[5] Despite this recent moment of self-reflexivity there have been only a

[4] Michel Foucault *The Order of Things: An Archeology of the Human Sciences* (New York: Picador, 1994[1966]); Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out: Classifications and Its Consequences* (Cambridge: MIT Press, 2000); Paul Rabinow and Nikolas Rose, "Biopower today" *BioSocieties* 2006 Vol. 1, No. 2, pp. 195-217.

[5] Within the study of history more generally see for example, Michel de Certeau, "The Historiographical Operation" in, *The Writing of History* (New York: Columbia University Press, 1988), pp. 56-114. Within

few attempts to bridge the study of science and the study of religion on the question of race.[6] Thus, using race as connective tissue, this body of work attempts to link work being done on the porous relationship between science and society[7] with efforts to reframe the divisions between science and religion.[8] With this interdisciplinary approach I look to shed light on how Christian ideas about nature, humanity, and history have facilitated the development of racial categories within Western science.

The narrative I have created, however, does not attempt to provide a comprehensive account of the history of modern scientific discussions of race. The historians George Frederickson and Peter Bowler, along with the anthropologists Audrey Smedely and Jonathan Marks, have aptly covered this ground.[9] Instead I will complement

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the history of science and science studies specifically see: Joan Fujimura, "Crafting science: standardized packages, boundary objects and 'translations'" in, *Science as Practice and Culture* ed., Andrew Pickering (Chicago: Chicago University Press, 1992), pp. 168-214; Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 1993); Thomas L. Haskell, *Objectivity is Not Neutrality: Explanatory Schemes in History* (Baltimore: The Johns Hopkins University Press, 1998); Ian Hacking, *The social construction of what?* (Cambridge: Harvard University Press, 1999). Within the study of religion see, Russell T. McCutcheon, *Critics not Caretakers: Redesribing the Public Study of Religion* (New York: State University Press, 2001); Jonathan Z. Smith, "Religion, Religions, Religious" in, *Critical Terms for Religious Studies* ed. Mark C. Taylor (Chicago: University of Chicago Press, 1998); Tala Asad, *Formations of the Secular: Christianity, Islam, Modernity* (Stanford: Stanford University Press).

[6] Some recent and very fascinating studies at this intersection have been done by G. Blair Nelson, "'Men before Adam!': American Debates over the Unity and Antiquity of Humanity" in, *When Science and Christianity Meet*, pp. 111-138 and David Livingstone, *Adams Ancestors: Race, Religion, and the Politics of Human Origins* (Baltimore: Johns Hopkins University Press, 2008).

[7] Bruno Latour, *We Have Never Been Modern*; Ian Hacking, *The social construction of what?*; Michel Callon "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fisherman of St. Brieuc Bay" in, *Power, Action and Belief: A New Sociology of Knowledge* ed., J. Law (London: Routledge, 1999); Ullica Segerstrele ed., *Beyond the Science Wars: The Missing Discourse about Science and Society* (Albany: State University of New York Press, 2000); Jenny Reardon, "Race without Salvation: Beyond the Science/Society Divide in Genomic Studies of Human Diversity" in, *Revisiting Race in a Genomic Age* (New Jersey: Rutgers University Press, 2008), pp. 304-319.

[8] John Brooke and Geoffrey Cantor, *Reconstructing Nature: The Engagement of Science and Religion* (Edinburgh: T&T Clark, 1998); John H. Brooke, "Religious belief and the content of the sciences" in, *Science in Theistic Contexts: Cognitive Dimensions* (Chicago: University of Chicago Press, 2001).

[9] See George Frederickson, *The Black Image in the White Mind: The Debate on Afro-American Character and Destiny, 1817-1914* (Middletown: Wesleyan U Press, 1971); Peter Bowler, *Evolution: The History of an Idea* (Berkeley: UC Press 1989); Jonathan Marks, *Human Biodiversity: Genes, Race, and History* (New Brunswick: Transaction Press, 1995); Audrey Smedley, *Race in North America: Origin and Evolution of a Worldview* (Boulder: Westview Press, 1999.

these large-scale studies by focusing on four different historical moments that disclose how religious and scientific epistemologies have converged on the question of race.

In each of the chapters, to be detailed below, readers will find that I am primarily concerned with the way scientific thinkers, rather than the lay public, have thought about race. I am interested in creating an intellectual history and therefore have focused on the historical actors that have made important contributions to the way racial differences were understood scientifically. I have also turned to the thought of ostensibly secular scientific thinkers because of my interest in showing how religious ideas have surfaced in their thinking about race.

As I mentioned above, it is widely held that following the emergence of scientific naturalism in the eighteenth century modern thinkers progressively abandoned speculative metaphysics and the use of religious concepts such as "God" in their explanations of natural phenomena.[10] Many of the narratives about the developments of modern science embody what the intellectual historian and philosopher Charles Taylor has called "subtraction stories."[11] Subtraction stories are accounts of the history of Western thought that claim the influence of religious ideas among the intellectual elite gradually subsided as secularization blossomed within Western countries—particularly Western Europe and the United States. John C. Greene's classic work *The Death of Adam* is an excellent example of a subtraction story. As his title suggests, Greene argues that religious ideas had very little influence on the way scientific thinkers thought about race

[10] See Jacques Roger, "The Mechanistic Conception of Life" in, *God and Nature: Historical Essays on the Encounter between Christianity and Science* ed. Lindberg and Numbers (Berkeley: UC Press, 1986), pp. 277-295; Ronald Numbers, "Science without God: Natural Laws and Christian Beliefs" in, *When Science and Christianity Meet* ed. Lindberg and Numbers, (Chicago: University of Chicago Press, 2004), pp. 265-285.
[11] Charles Taylor, *A Secular Age* (Cambridge: Harvard University Press, 2007), pp 22; 530-531.

and human development following Darwin.[12] Another major component of these "subtraction stories" is the weight scholars give to the major technological developments that took place across the natural and biological sciences at the turn of the twentieth century, along with the professionalization and diversification of scientific and medical disciplines on both sides of the Atlantic.[13] These institutional changes are often considered proof of Max Weber's theory of structural differentiation, which is thought to occur as modern bodies of knowledge undergo the process of secularization.[14] For many scholars, the development of the value-neutral, disinterested and objective genre of the "scientific text" at the turn of the twentieth century is a symbol for the institutional autonomy and progressive philosophical transformations that distinguish modern secular science from the study of natural history; bestowing literary form to the triumph of secularism.[15] Without question, there is a noticeable difference in tone, use of metaphor, and accessibility of Darwin's *Origin of Species* (1859) when compared, for example, to Ernst Mayr's *Systematics and the Origins of Species* (1942).

The account of racial science I will describe in the pages that follow acknowledges the institutional autonomy, disciplinary diversity, and philosophical

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[12] John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought* (Ames: Iowa State University Press, 1977).

[13] For a discussion of the institutional and epistemological changes that brought about modern science in Brittan see: Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Oxford University Press, 1981). For a discussion of this process in the United States see: Alexandra Oleson and John Voss, *The Organization of Knowledge in Modern America, 1860-1920* (Baltimore: Johns Hopkins University Press, 1979).

[14] Max Weber, *The Protestant Ethic and the Spirit of Capitalism* (New York: Routledge 1995 [1905]); "Science as Vocation" in, *From Max Weber: Essays in Sociology* (New York: Routledge 2007 [1919]), pp. 129-158.

[15] Nancy Leys Stepans and Sander L. Gilman describe how the institutional and philosophical changes embodied by the value natural genre of the scientific text posed challenges to non-scientific experts attempting to critique scientific racism on religious, political and moral grounds. See "Appropriating the Idioms of Science: The Rejection of Scientific Racism" in, *The Racial Economy of Science: Toward a Democratic Future* ed. Sandra Harding (Bloomington: Indiana University Press, 1993), pp. 175-177.

progress achieved by modern thinkers. However, my account of the history of scientific studies of race rejects the notion that Christian concepts about nature, humanity, and history were no longer useful for modern thinkers. I demonstrate how earlier styles of reasoning that were shaped by Christian concepts continued to be adopted by modern scientists in their respective studies of human heredity and race. This is to say that at a conceptual level, the secular and the religious have coexisted within scientific formulations of race even during periods of structural and disciplinary differentiation.

Coming to terms with how racial thinking within modern science has been sustained by both the sacred and the secular requires creative engagement with the philosophy of science. On this score, my understanding of the development of scientific theories draws from Ludwig Fleck's theory on the lasting influence of rudimentary concepts within scientific frameworks. In his classic work *Genesis and Development of a Scientific Fact* (1935) Fleck argued that "proto" or "rudimentary ideas" (such as the immutability of species, the recent antiquity of man, or the wise benevolence of Nature), can in fact become a constitutive part of a scientific body of knowledge.[16] Fleck found that "rudimentary ideas" shape the style of scientific inquiry (or what he called a "thought collective") by closing off particular forms of investigation or obliging thinkers to pursue certain lines of reasoning. This process could occur even if scientists themselves were not aware of the constraints imposed upon their thinking on a given subject. Interestingly, Fleck saw that rudimentary ideas could remain productive even beyond the immediate intellectual settings where they were originally forged.[17] As Fleck argued, "thought styles

[16] Ludwig Fleck, *Genesis and Development of a Scientific Fact* trans. F. Bradley and T. Trenn, (Chicago: University of Chicago Press, 1981[1935]), pp. 25.
[17] Ibid., pp. 99-100.

leave remnants" and become the connective tissue between old and new scientific theories.[18] Fleck reasoned that, given the ability of previous concepts to leave an impression within scientific frameworks, it was possible "for instance, to trace the development of the idea of an infectious disease from a primitive belief in demons, through the idea of a disease miasma, to the theory of the pathogenic agent."[19] For Fleck, the challenge for the historian and philosopher of science was to show how each iterative step within the development of a scientific theory was linked to and born out of antecedent concepts and styles of reasoning.

Garnering insights from Fleck's theory, I have attempted to retrace the origin and longevity of rudimentary ideas that were once nurtured by Christian thought and have primed modern "secular" scientists to think of race in ways that have continuities with theological views of nature, humanity, and history. Adding to Fleck's observations, I have found that older thought patterns can be brought back to life within epistemological settings where alternative explanatory options are available to scientists. The study of race is a perfect example, as racial typological thinking has resurfaced within scientific studies on intelligence, disease, and most recently genetic ancestry. Indeed, racial typologies have returned within modern science even though they were denounced by scholars following in the UNESCO Statements on Race in the 1950s and then again by geneticists in 2000 after the sequencing of the human genome.[20] I contend that the very notion of race itself is a product of a religious style of reasoning. Yet because of its

[18] Ibid., pp. 100.
[19] Ibid., pp. 100.
[20] See Ashley Montagu's *Statement on Race: An Extended Discussion in Plain Language of the UNESCO Statement by Experts on Race Problems* (New York: Henry Schuman, 1951). For a succinct account of the debate among biologists on the concept race see Frank B. Livingstone's, "On the Nonexistence of Human Races" in, *The Racial Economy of Science: Toward a Democratic Future* ed. Sandra Harding (Bloomington: Indiana University Press, 1993), pp. 133-141.

explanatory efficacy race continues to be deployed by scientists interested in organizing data about human difference. Our perceptions of race, it seems, are still in the midst of the Darwinian revolution.[21]

Theories about the secularization of modern biology all too often reinforce our common assumptions about the history of modern science and its apparent struggle to break free from the limits of a Christian view of the natural world. No doubt modern evolutionary biology was successful at bringing about a new way to view the origin and development of life on earth. But once we take a serious look at the continuity of ideas about race before and after the time of Darwin, the revolution in modern biology turns out to be not as pervasive as is often assumed. In fact focusing exclusively on the history of modern biology is quite limiting given that during the early twentieth century many scientific theories about race took place at the intersection of biology and other fields, such as medicine, epidemiology, public health, psychology, actuary studies, and sociology. My dissertation shows how ideas that might have been outdated and disproved among established biologists turned out to be very useful for other scientific disciplines interested in race. In fact it was often at the periphery of biological science where the influence of longstanding religious ideas about species traits and heredity remained acutely prominent. With this in mind, I provide a historical narrative that shows how this legacy lived on even when the study of the natural world and human life developed the institutional and philosophical features we now associate with modern secular science. Across a varied but linked history I demonstrate how religious forms of reasoning have

[21] Recently the computational geneticists Kenneth M. Weiss and Jeffrey C. Long have argued that contemporary genetic studies of human ancestry are difficult to distinguish from the typologies of 19th century naturalists and appear grounded by philosophical assumptions about human variation that are fundamentally non-Darwinian. See their article "Non-Darwinian estimation: My ancestors, my genes' ancestors" in, *Genome Research* Vol. 19, 2009, pp. 703-710.

had a lasting influence on modern scientific studies of race well into the twentieth century and appear to have resurfaced within contemporary genetic studies of population ancestry.

Roadmap to the Secular-Sacred History of Scientific Theories of Race

In the first two chapters of my dissertation I describe the religious foundations of modern scientific theories of race. These two chapters detail the cache of theological concepts and presuppositions about nature and human life that would have a formative influence over the way secular naturalists thought about race after the Enlightenment. The third and fourth chapters trace the legacy of these concepts and presuppositions over the course of the twentieth and twenty-first centuries. These final chapters show how antecedent explanatory strategies—whose origins were clearly rooted in Christian thinking—remained viable options for scientists even after the concept of race had been challenged and refuted by medical thinkers and evolutionary biologists.

In chapter one I revisit the inception of human taxonomies during the 18th century, focusing on the work of the German physician and Romantic naturalist Johann Friedrich Blumenbach (1752-1840). Contemporary historians and anthropologists cite Blumenbach as the father of our modern racial categories.[22] The standard reading of his account of race has emphasized the prominence of Plato's Theory of Forms within Blumenbach's division of humanity into five ancestrally distinct populations.[23] I look to counter this view, arguing that Christian ideas also contributed to Blumenbach's theory

[22] Stephan Jay Gould makes this claim in, *The Mismeasure of Man* (New York: W.W. Norton & Company, 1996), pp. 405. Audrey Smedely also makes this claim in, *Race in North America: Origin and Evolution of a Worldview*, pp. 163-164.
[23]See Jonathan Marks, *Human Biodiversity: Genes, Race, and History* (New Brunswick: Transaction Press, 1995) pp. 53-55.

of race. I argue that one can view his racial taxonomy as translating the biblical idea of human descent from Adam into naturalistic terms, albeit within limits. Blumenbach's novel theory of a "formative force" [*Bildungstrieb*] explains how non-European races came to be. Yet the limit of this naturalism on his thinking is apparent when it comes to the origins of the first human type (the "Caucasian" race), which Blumenbach does not clarify. In fact, the initial creation of the first human is completely unaccounted for within his taxonomy. For the most part, Blumenbach kept intact traditional Christian beliefs, such as the idea that human beings were created only six thousand years ago. Although an implicit atheism was beginning to shape the philosophical approach of naturalists during his time, Blumenbach continued to believe that humans were not derived from animal forms but were nascent creations.[24] Blumenbach himself famously claimed that humans were a naturally domesticated species with the innate disposition for reason, morality, and civilization. These were the defining traits that distinguished humans from other creatures. Indeed up until the mid-nineteenth century naturalists continued to affirm the recent antiquity and unique creation of human beings even though geologists were discovering fossils and rock formations that demonstrated the earth was created many years before the time of Adam.[25] In other words, the secularization of nature outpaced the secularization of human life itself.

But what does it mean for a thinker like Blumenbach to avow the recent antiquity of human life and the belief that humans were created separately from the animal world when, like many Enlightenment thinkers, he also wanted to overcome the Newtonian

[24] Johann Friedrich Blumenbach, *Contributions to Natural History* (1790-1811).
[25] See Mott T. Greene, "Genesis and Geology Revisited: The Order of Nature and the Nature of Order in Nineteenth-Century Britain" in, *When Science and Christianity Meet* ed. Lindberg and Numbers, (Chicago: University of Chicago Press, 2003), pp. 139-160.

fixation of using God and other supernatural ideas to explain natural phenomena? I do not think this is an issue of religious beliefs tainting scientific truth, but rather one of new scientific ideas about human life being born out of and nurtured by longstanding Christian ideas and theological reasoning strategies. I contend that Blumenbach's theory of race is an example of religious ideas remaining effective in epistemological settings that aspired to be secular. We can think of Blumenbach's understanding of race as standing midway between traditional theism and evolutionary biology. What is significant is how a mixture of longstanding religious ideas and new scientific theories about human life worked together to solidify modern theories of racial difference. This is a theme I thread through the rest of the dissertation.

It is my view that the religious elements within Blumenbach's thinking have been overlooked largely because scholars have lost sight of how the quest for understanding our racial origins is driven by existential concerns. I am using the term "existential" loosely here to mean a shared anxiety about what makes us human: from where did we originate, and what is our relationship to those who appear on the surface to be both similar and different from us? I contend that Christian ideas and theological reasoning strategies have persisted within modern scientific studies of race because they bring closure to certain existential questions about the origin of human difference. On this point, it is an open question whether humans simply have existential needs that cannot be met by science alone, or, when it comes to the study of race, whether modern scientific thinkers have too easily fallen back on older explanatory frameworks whose roots are Christian.

In the second chapter I analyze the debates in America over the common origins of different racial groups. Here I focus on the thought of Josiah C. Nott, a southern physician, early epidemiologist and one of the major figures of the so-called "American School of Ethnology" that reached maturation during the time of the American Civil War. Nott claimed that humanity's common origin, or monogenesis, was an unscientific belief and a mere carryover from when natural historians were indebted to Christian ideas about nature and human life. Nott looked to establish an account of the history of human racial groups that was truly secular and moved beyond the constraints of the creation narratives of the Bible. I show, however, that Nott failed. Nott's alternative theory of polygenesis (multiple human origins) *also* remained conceptually rooted in Christian ideas about the descent of human populations and the stable heredity of racial traits. This chapter discloses an interesting paradox: Christian ideas were capable of facilitating the belief in multiple distinct moments of human creation (polygenesis) and not exclusively the notion of common descent. In other words both polygenism and monogenism could be derived from Christian logic.

In this chapter I also clarify the importance of polygenism as a conceptual precursor to certain twentieth century theories of human difference. I argue that nineteenth century polygenists were the conceptual forbearers of present day scientists who turn almost exclusively to the genetic ancestry of a population to explain the differences between contemporary groups.[26] Polygenists were the first to draw strong correlations between distinct population ancestry and the fixed inheritance of racial traits.

[26] For more on this growing methodological trend to ignore non-genetic environmental factors within genetic ancestry and disease research see Duana Fullwiley, "The Biologistical Construction of Race: 'Admixture Technology and the New Genetic Medicine" in, *Social Studies of Science* Vol. 38, 2008, pp. 695-735.

This connection often appeared more important than the notion that all races were the descendants of a single continental group (in biblical terms "descendants of Adam"). I contend that scholars have failed to recognize how nineteenth century polygenists had a hand in shaping the research questions inherited by present day public health experts, geneticists, and human behavioral researchers interested in how ancestry shapes health and behavior.

After establishing the Christian dimensions of scientific theories of race, in the second half of the dissertation I shift to describing how the meaning of common descent (monogenesis) was lost on many early twentieth century scientists and medical practitioners. In the third chapter I show how public health researchers in the US disregarded the philosophical implications of monogenism as they were convinced that distinct ancestry explained why some races were more susceptible to certain diseases. The fervor of Mendelian heredity (stirred by the U.S. eugenic campaigns of the 1920s and the politically driven racial science of social Darwinists) helped to create the perception that ancestral biology was the cause of race-specific diseases and other unique population traits. Many Progressive Era scientists, physicians, and lay people in the US were led to believe that an individual's biology—rather than the environment or social inequality—determined their health and behavior. When this idea was extrapolated to explain population differences many came to believe that each race was created by Nature with specific physical characteristics. The most prominent of these characteristics were susceptibility to certain diseases (particularly venereal diseases) and limited intellectual and moral capacities. It was further believed that these natural endowments

explained the disparity between blacks and whites in their respective rates of infant mortality, life expectancy, contraction of communicable disease, and poverty.

Christian naturalists in the late seventeenth century, such as John Ray, claimed that every living species was endowed with permanent inheritable traits that allowed them to thrive only within their indigenous environment. Ray took species traits to be one of many objects that reflected the wisdom of God within Nature. Chapter three shows how this same logic was at work among biologists, medical thinkers, and social scientists at the turn of the twentieth century. Many of these scientists insisted that the poor health and social status of the American Negro was the result of his or her inherited traits, not their environment or socio-political situation. In these theories "Nature" and the "germplasm" fulfilled the same explanatory role performed by the concept of "God" in previous centuries. When we consider these assumptions in light of seventeenth century theological explanations for human descent and the fixity of species traits, it is clear that Christian forms of reasoning continued to hold sway over twentieth century medical science and public health research.

Yet, I show in this chapter how the African American physician Charles V. Roman (1864-1934), challenged these theories by reacting to what I call the eclipse of monogenism within early twentieth century public health research. Roman was one of the South's leading African-American physicians and social hygienists working out of Meharry Medical College in Nashville. He, along with other racially progressive social hygienists, contested the claims of biological determinists by reviving and transforming the environmentalist account of common human descent articulated by eighteenth and nineteenth century natural historians. For example, Blumenbach in the 18th century

insisted that the environment shaped the physical features of every population and was responsible for the differences between the races. In the 19th century the American naturalist and southern Presbyterian minister John Bachman challenged the views of American polygenists—particularly Josiah Nott—by also emphasizing how racial differences were not immemorial but the result of the environment impressing itself on the human form. Roman in his critique of so-called "race specific diseases," argued that human traits and dispositions were universal and therefore shared across the color line. He along with his other colleagues also affirmed that there were moral, social, economic, and political factors that had direct consequences for the health, biology, and various "traits" of a population. They reasoned that these social factors were the cause of present-day differences between blacks and whites. Roman argued that theories of innate biological dispositions and notions of racial heredity eclipsed these social determinants of health. The conflation of race with specific illnesses also occluded the relevance of common human descent for thinking about humanity's shared susceptibility to all diseases. Thus in his rejection of "race specific traits" not only did Roman draw upon a style of reasoning that was deployed by in eighteenth century Christian natural historians, he also articulated a critique of biological determinism.[27]

Roman held a very different view of the environment than those who believed Nature endowed each race with immutable traits passed from one generation to the next and that one's biological inheritance determined one's health and behavior. For Roman, Nature was an open-ended system whereby the environmental surroundings (which

[27] For recent work investigating how social and environmental factors impact black/white health disparities see the work of Nancy Krieger, "Theories for social epidemiology in the 21st century: an ecosocial perspective" in, *International Journal of Epidemiology* 2001, Vol. 30, pp. 668-677.

included social economic conditions, racial prejudice, and the living legacy of slavery) changed the human form. There were no grounds to justify a natural racial hierarchy because racial traits were not governed by a natural order inscribed within Nature presumably by an omnipotent force (i.e., God). For nineteenth century social scientists like Frederick Hoffman who affirmed that biology determined one's behavior and health—and whose *Race Traits and the American Negro* (1896) was widely influential during Roman's time—Nature was a closed system. The unique traits that each race possessed were set at a particular time in the past and were therefore impervious to such influences as climate, the political and economic life of a population, and education. In fact many early twentieth century thinkers thought that racial differences followed the laws of biology and that inferior races had a disposition to illness, immorality and low intelligence. Because they believed these characteristics were permanently set by Nature, these thinkers saw the social hygiene movement as ineffective.

With this line of reasoning early twentieth century biological determinists expressed a rationale whose form was highly theological. Human traits essentially reflected the law-like structure, order, and intentions of Nature; all attributes once reserved for God by naturalists in the seventeenth and eighteenth century. Nature and the environment were essentially proxies for an omnipresent law-like force that brought order to the natural world and to human life through a hierarchy of population specific traits, dispositions, and abilities. Even though Roman was a Christian and used the story of common human descent from Adam to contest claims of racial inferiority, he was not seduced into thinking that population differences were immutable and governed by a law-like forces. The conflict between Roman's line of reasoning and that of biological

determinists (like Hoffman) reveals yet again how longstanding Christian concepts were capable of influencing scientific thinkers to affirm ideas of common descent as well as to affirm ideologies of separate human origins. It is important to see the error in assuming that Christian ideas are inherently monogenist. Scientific thinkers who endowed Nature with the attributes of God in order to explain why the races varied, were also completely capable of reviving theological presuppositions that could justify distinct racial types, thereby eclipsing the importance of any notion of common human ancestry.

Roman is an understudied figure in this tumultuous period of American history. His early approach of combining modern medical science, social determinants of health, and Christian reasoning makes him a pivotal figure within the history of race and medicine within the US.

Without question, perceptions of human difference within science have become significantly more sophisticated since the nineteenth century. The paradigm shift within scientific conceptions of race that culminated with the UNESCO Statements on Race during the 1950s left many scientists critical of attempts to affirm a necessary connection between an individual's external phenotype (skin color, hair, skull shape) and his or her underlying racial essence. For many historians, advances within modern population genetics during the post-war period exorcised the lingering demons of nineteenth century racial typologies.[28] During the middle of the twentieth century, geneticists began moving

[28] Elazar Barkan, *The Retreat of Scientific Racism* (Cambridge: Cambridge University Press, 1992); John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism and Science: Social Impact and Interaction* (New Brunswick: Rutgers University Press, 2006); Rachel Silverman, "The Blood Group 'Fad' in Post-War Racial Anthropology' in, *Krober Anthropological Society Papers* ed. Jonathan Marks (Berkeley: University of California Press, 2000); Alan Goodman and Evelynn Hammonds, "Reconciling Race and Human Adaptability: Carleton Coon and the Persistence of Race in Scientific Discourse" in, *Krober Anthropological Society Papers* ed. Jonathan Marks (Berkeley: University of California Press, 2000). Jonathan Marks also argues this position in, *Human Biodiversity*, pp. 157-165.

away from the idea that there was a clear biological connection between the genes we inherit and the traits we manifest. According to the Mendelian paradigm of heredity, inheritance is quantitative and probabilistic with any individual only having one-eighth of a chance of inheriting a particular gene from any great-grandparent.[29] With a new vision of heredity scientists were beginning to think that the idea of race being consistently passed down from one generation to the next was oversimplified and inaccurate. As early as the 1930s geneticists increasingly understood human differences less in terms of "race" but more in terms of populations. From this vantage point differences between so-called "racial" groups could be better understood in terms of the frequency and concentration of certain alleles (or variants of genetic traits) across a given population. Factors such as geographic isolation, natural selection, and mutations explained why individuals across continents seemed to have external differences. Even still, by the 1970s these differences were understood in terms of a gradual continuity of allelic differences across populations; what geneticists call clinal variation.[30] In other words, so-called "races" were not discrete populations, but groups with high concentrations of specific alleles. These same alleles were also found in other groups, but at lower frequencies. The idea of race specific traits in the human genome is an illusion. Moreover, with the genetic sequencing efforts of the Human Genome Project (HGP), geneticists found that the surface differences expressed between any two "races" constituted less than a half of a percent of our total genome. This vision of human *similarity* had become the recognized view of most scientists by the time scientists

[29] Jonathan Marks, "Race: Past, Present, Future" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 22.
[30] Ibid., pp. 23-24.

announced in June of 2000 (after sequencing the first draft of the human genome) that humans are 99.9% same.[31] With an unprecedented view of the structure of human DNA, population geneticists helped usher in yet another paradigm shift with respect to how scientists thought of race. Many geneticists would gradually come to see the phenotypic variations between so-called racial groups as evolutionarily insignificant in light of the overwhelming amount of genetic information shared between populations, others would not.

Despite a new paradigm for explaining population differences within genetics, the last decade has witnessed a resurgence of what social scientists have called the return of racial typological thinking within genetics.[32] By looking at the most divergent qualities of the most geographically separated individuals, geneticists have been able to increase the likelihood of detecting differences between populations. Specifically, scientists have sought out genetic markers called Single Nucleotide Polymorphisms (SNPs): variations in the DNA nucleotide base-pair pattern of As Ts Gs and Cs. A SNP is thought to occur when one of theses base-pairs switches to another nucleotide. Population geneticists interested in human difference claim to have found SNPs unique to the four major continental populations (Africa, Asia, Europe, and North America) from which contemporary humans are thought to have descended. In this most recent form of typological thinking, geneticists have used a catalogue of carefully selected SNPs to hypothesize the various ancestries (genetic admixture) that an individual might posses.[33]

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[31] Jenny Reardon, "Race without Salvation: Beyond the Science/Society Divide in Genomic Studies of Human Diversity" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 304.
[32] Marks, "Race: Past, Present, Future" in, *Revisiting Race in a Genomic Age*, pp. 22-25.
[33] Duana Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine" in, *Social Studies of Science* 2008**,** 38(5): pp. 695-735.

In recent years the public has grown familiar with this technology due to the popularity of various television documentaries on human genetic ancestry as well as the increased availability and affordability of direct-to-consumer DNA testing.[34]

Recent discoveries by geneticists regarding the distinct ancestry of present-day populations have given renewed significance to the biological differences between groups often thought of as races. It appears that the increased attention to the genetic traits of distinct ancestral groups has the power to eclipse, as in the nineteenth and early twentieth century, the significance and meaning of common human descent. In my fourth and final chapter I examine the most recent sequencing of the Neanderthal genome and the discovery that mating occurred between this hominid group and modern humans around 40,000 years ago. Geneticists from the Neanderthal Genome Project claim that evidence of this encounter is found exclusively within the genomes of Europeans and Asians. Africans, however, are said not to possess Neanderthal genetic ancestry. This discovery has prompted many researchers to see if the Neanderthal DNA found in today's living descendants of Eurasia have conferred any unique biological advantages not shared by contemporary Africans. By concluding my dissertation with this recent discovery I show how assumptions about the persistence of population traits used in this study reiterate the racial distinctions deployed by scientific thinkers at the turn of the twentieth century. This chapter also shows how the discovery of Neanderthal DNA among a select number of present-day populations promises to once again redefine the meaning and limits of

[34] Henry T. Greely, "Genetic Genealogy: Genetics Meets the Marketplace" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 215-23; Kimberly Tallbear, "Native-American-DNA.com: In Search of Native American Race and Tribe" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), 235-252.

common descent by giving renewed strength to longstanding beliefs about the biological consequences of distinct human origins at the root of today's "races" (i.e., polygenism).

Social scientists have argued that we are witnessing the re-commitment of science to the practice of racial classification. This recommitment has been facilitated by the emergence of new technologies for researching diseases across "ethnic" populations and the increased use of racial ancestry for medical practice, pharmaceutical research, and behavioral studies.[35] I conclude the dissertation by arguing that greater attention to the religious roots of scientific conceptions of human variation may help explain the persistence of antiquated racialized thinking within modern science. The influence of these Christian roots can be thought of in two ways. At one level it is clear that religious ideas about heredity, descent, and the ends of nature have proven useful for scientific forays into why humans appear so different from one another. As my study shows, religious ideas can thrive productively within epistemological settings assumed to be inherently secular. Yet, at another level, the religious dimension of scientific discussions of race revolves around the ability of scientists to *will* into being that which—objectively speaking—does not exist.

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[35] See, Sandra Soo-Jin Lee, J. Mountain, B. Keonig, "The Meanings of Race in the New Genomics: Implications for Health Disparity Research" in, *Yale Journal of Health Policy, Law and Ethics* 2001, Vol. 1, pp. 33-75; Pilar Ossorio and Troy Duster "Race and Genetics: Controversies in Biomedical, Behavioral, and Forensic Sciences" in, *American Psychologist* 2005, Vol. 60, No. 1, pp. 115-128; Alexandra Shields, M. Fortun, E. Hammonds, et al , "The Use of Race Variables in Genetics Studies of Complex Traits and the Goal of Reducing Health Disparities: A Transdisciplinary Perspective in, *American Psychologist* 2005, Vol. 60, No. 1, pp. 104-114; Duana Fullwiley, "The Molecularization of Race: U.S. Health Institutions, Pharmacogenetics Practice, and Public Science" in, *Revisiting Race in a Genomic Age* (New Jersey: Rutgers University Press, 2008), pp. 149-171.

Coming to grips with human variation is not a matter of discerning readily available facts inscribed onto our bodies by Nature. Rather, seeing race in the human face, body, physiognomy and character are part of cultural and political forms of reasoning that scientists—as social beings—have created over time. Religious forms of reasoning are an overlooked piece of the conceptual apparatus that has guided how modern western thinkers have understood human descent and physical variation. When we examine the history of scientific discussions of race it is clear that creating divisions between human populations has also allowed many to imagine that there is order, intention, and meaning to a natural world that otherwise presents itself as indifferent to the human situation. What drives this move, it seems, is the desperate effort to offer a definitive solution to the existential dilemma of where humans originate and what makes us unique. Therefore, race, at least since the eighteenth century, has served as a starting point for partially explaining the nature and meaning of human life. Contemporary thinkers have been no less interested in finding a definitive answer to this existential question than their early modern forbearers.

Many today have come to adopt the normative framework of the modern biologist. That is, we tend to think about the study of race as a purely scientific venture, not an existential dilemma. Finding an answer to explain our relationship to those who appear both similar and different from us is often taken to be a stubborn problem to be solved in time with the right scientific methods and appropriate technology. Yet it seems that a commitment to value-neutral knowledge and a belief in scientific progress have hidden from view the ways that the pursuit of human origins is driven by existential needs that exceed the limits of scientific knowledge. Resolving these needs constitute

what I call the *religious pursuit of race*. As with religious beliefs and practices, scientific theories of race have gained their power by being able to efface the role that the human hand has played in both the perception and construction of the objects (i.e., genes, intelligence, health) thought to be indicative of human difference. Purely biological or genetic explanations for why humans vary, too easily overlook the social and cultural elements of our life-worlds that leave their mark on the human form and give meaning to our existence. This is what happens, for example, when attention to the biological inheritance of a population eclipses the social factors (such as class, diet, environmental exposures, and access to preventative care) that influence the health of certain members within society. The turn to biological or genetic explanations for so-called racial differences—increasingly derived from quantitative genetic and statistical calculations—offers explanations that appear to be freed from the taint of human practices. But when we take seriously how social and cultural factors create variation within our species and how scientific frameworks can be linked with broader social needs, that which appears natural, innate, or biologically fixed in fact turns out to be profoundly social and historical. This is not to say that all distinctions are purely social and that biological mechanisms are irrelevant to what makes us human. My point is simply that throughout the history of scientific discussions of race too often biology has eclipsed the social factors within our control that shape who and what we are. It is as though we still harbor the need for a supernatural—i.e., that which transcends human history—explanation for where we come from and why we differ.

The historical narrative I have constructed will contribute to reframing our understanding of science, religion and secularization. Furthermore, by showing the

conceptual work that Christian claims have performed within scientific settings, wittingly or not, I look to bridge the study of religion with the various sub-disciplines that comprise the field of science studies more generally.

Chapter 1

Recovering the Influence of Christianity over Johann Friedrich Blumenbach's Theory of Human Descent

Problems in Historiography

An attempt to explain the contribution of Christian ideas to the development of modern scientific theories of race ought to begin with the German comparative anatomist Johann Friedrich Blumenbach. This is not because he was a theologian or expressed any explicit affinities for Christian thinking. Blumenbach was a true man of science and his thinking a direct product of the Enlightenment. Blumenbach studied medicine at Jena and earned his M.D. from Gottingen University in 1775. He would go on to enjoy a long career as one of the first modern academic anthropologist; a career that extended well into the nineteenth century.[1] Blumenbach was not the first or the only modern thinker during his time to theorize about race. He was a contemporary of Immanuel Kant, Voltaire, James C. Prichard, and Comte de Buffon, all of whom made significant contributions to our modern understanding of race.

Our story begins with Blumenbach because of his importance in establishing anthropology as a supposedly autonomous and secular field of inquiry. Indeed Blumenbach is routinely described by contemporary anthropologists and historians of science as the father of modern scientific racial classifications.[2] Blumenbach's 1775 thesis, *On the Natural Variety of Mankind*—which would undergo several revisions over

[1] K.F.H. Marx, "Memoir of J. F. Blumenbach" in, *The Anthropological Treatises of Johann Friedrich Blumenbach*, trans. Thomas Bendysche (London: Longman, Green, Roberts & Green, 1865), pp. 3-45.
[2] See for example Stephen Jay Gould, *The Mismeasure of Man* (New York: W.W. Norton, 1996), pp. 401; Audrey Smedley, *Race in North America: Origin and Evolution of a Worldview* (Boulder: Westview Press, 1999), pp. 163.

the course of Blumenbach's career—was a seminal text for post-Enlightenment European and American anthropology. Revising the human racial taxonomy of Carl Linnaeus, Blumenbach was the first ethnologist to divide the human species into five distinct types (Africa, Asian, Caucasian, American, Malay). With his invention of the term "Caucasian", he was the first modern thinker to provide a "scientific" explanation for how whites were the original progenitor of the human race. Moreover, Blumenbach's racial theory was widely influential among American ethnologists during the nineteenth century. We will see in the following chapter how naturalists, on both sides of the question of common human origins, drew upon Blumenbach's racial typology and his naturalistic explanation for human variation.

Yet, given what we know about the fluidity of religious and science identities during the eighteenth century, it is remarkable that little attention has been given to the influence of Christian ideas over Blumenbach's theory. Blumenbach studied and taught at Gottingen University during a time when the university took ownership over Christian thought and refashioned it to contribute to building the national and ethnic identity of modern Germany.[3] As one of the preeminent institutions of higher education in all of Europe, Gottingen embodied a uniquely modern infusion of the secular and sacred. Created at the behest of King George II in 1734, Gottingen (originally called Georgia Augusta) was responsible for the scientization (*Verwissenschaftlichung*), deconfessionalization (*Entkonfessionalisierung*), and nationalization (*Verstaatlichung*) of Germany. [4] Yet it was also home to one of the most influential departments of academic theology during the Enlightenment due to the pioneering and innovative biblical

[3] Michael C. Legaspi, *The Death of Scripture and the Rise of Biblical Studies* (Oxford: Oxford University Press, 2010), pp. 27-51.
[4] Ibid., pp. 27-51.

scholarship of Johann David Michaelis.[5] Academic theologians and biblical scholars at Gottingen were unlike other European intellectuals during the Enlightenment. Rather than engage in apologetics or scorn biblical knowledge, German academics like Michaelis looked to reform Christian orthodoxy in such a way that made theology and the Bible a relevant resource for understanding modern aesthetics, political power, ancient law, and fostering a historical understanding of society.[6] Blumenbach joined the faculty in 1776 (at the age of 24) and held the same academic chair for over 60 years. His tenure at Gottingen was certainly long enough to absorb and observe the transformations taking place in the academic theology under the leadership of Michaelis.[7]

Given Gottingen's effort to make Christian thought relevant to other modern disciplines, one must ask how this shaped Blumenbach's supposedly "secularization" of the study of human origins? It is surely no coincidence that Blumenbach provided a naturalistic account of how the white patriarch of the human race descended from the Caucus mountains in Georgia; a site that Blumenbach believed was near Mount Ararat where the book of Genesis placed Noah's ark following the great Deluge.[8] In fact, during the period Blumenbach wrote and revised *On the Natural Varieties of Mankind* Michaelis published two seminal volumes between 1769 and 1780 on Biblical geography.[9] In his work, *Spicilegium geographiae hebraeorum exterae post Bochartum* (1769-80), Michaelis eliminated what he held to be the distorting influences of Jewish mysticism

[5] Ibid., pp. 27-51
[6] Ibid., pp. 31.
[7] H.F. Augstein, "From the Land of the Bible to the Caucasus and beyond: The Shifting ideas of the Geographical Origin of Humankind" in, *Race, Science, and Medicine, 1700-1960 ed. Waltraud Ernst and Bernard Harris* (New York: Routledge, 1999), pp. 67.
[8] Ibid., pp. 64.
[9] Ibid., pp. 67.

over Scriptural truth.[10] In this effort Michaelis placed the Garden of Eden in the region comprising Kashmir and Tibet. [11] He also claimed that Abraham's native country, Chaldaea, was actually near the Black Sea toward the Caucasus, not Mesopotamia, thereby intimating he was of European ancestry.[12] As the historian H.F. Augstein has noted, Michaelis' theory was too original to be ignored by German intellectuals at Gottingen studying the origin of human life and surely played a role in Blumenbach's decision to designate the Georgian population as the immediate descendants of the first human.[13] Moreover, Blumenbach's anthropology was written during a time when political anti-semitism was on the rise in Germany.[14] Michaelis was very involved in these issues. He opposed granting civil rights to Jews in Germany and was a leading critic against allowing them to serve in the military on the grounds that the southern climate of ancient Israel rendered eighteenth century Jews physically unfit.[15] Michaelis' solution to the "Jewish Problem" was the relocation of Jews to Germany's colonies in the Caribbean where a climate similar to ancient Israel would enable them to be economically productive for the German state.[16] The historian Jonathan Hess has suggested that Blumenbach's racial theories—which were based on the assumption that racial differences were caused by climate—influenced biblical scholarship and how academics perceived Jews as a distinct race.[17]

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[10] Ibid., pp. 67.
[11] Ibid., pp. 67.
[12] Ibid., pp. 67.
[13] Ibid., pp. 67.
[14] Jonathan Hess, "Johann David Michaelis and the Colonial Imaginary: Orientalism and the Emergence of Racial Antisemitism in Eighteenth-Century Germany" *Jewish Social Studies* (2000) 6:2, pp. 57.
[15] Ibid., pp. 58.
[16] Ibid., pp. 59.
[17] Ibid., pp. 58.

Despite these obvious threads among science, nation building, anti-Semitism, and religion most commentaries on Blumenbach's anthropology have largely ignored—and in some cases written out—the Christian valences to his thinking about race. Instead, one finds a strong secular reading that privileges the Platonic and in some vague sense "Enlightenment" influences on his thought. For example, the acclaimed physical anthropologist and public intellectual Steven Jay Gould wrote that:

> An old tradition in science proclaims that changes in theory must be driven by observations. Since most scientists believe this simplistic formula, they assume that their own shifts in interpretation only record their better understanding of newly discovered facts. Scientists therefore tend to be unaware of their own mental impositions upon the world's messy and ambiguous factuality. Such mental impositions arise from a variety of sources, including psychological predisposition and social context. Blumenbach lived in an age when ideas of progress, and of cultural superiority of European life, dominated the political and social world of his contemporaries. Implicit and loosely formulated (or even unconscious) notions of racial ranking fit well with such a worldview; almost any other taxonomic scheme would have been anomalous […] I think that [Blumenbach] was only, and largely passively, recording the pervasive social view of his time.[18]

In this otherwise apt description, Gould failed to see how a practical application of Christian thought led by biblical scholars like Michaelis and the rise of eighteenth century German nationalism was constitutive of the "variety of sources" that made up the "predisposition and social context" under which Blumenbach constructed his theory of racial origins. Gould did not give attention to the links between Blumenbach's racial taxonomy and the major shifts in the study of Christian thought. These shifts were instrumental for the University of Gottingen's program for nationalizing German identity during the eighteenth century. Other contemporary scholars make similar oversights concerning the links between German Christian nationalism and Blumenbach's account

[18] Stephan Jay Gould, *Mismeasure of Man*, pp. 406.

of human racial origins. Biological anthropologist and science critic Jonathan Marks writes:

> Blumenbach certainly recognized that humans varied in a manner that defied discrete categorization. Nevertheless he felt that by describing a small number of typical human strains, the entirety of the species could be accommodated as simply variations on each of these themes. This Platonic approach to biological diversity (in which natural variation is ignored in pursuit of a transcendent form) was the only approach available in the 18th century, and would not be superseded until a century later, by Darwin.[19]

Although Plato's theory of forms might have played a role in Blumenbach's view of human descent the key issue is recovering both the Christian and the Greek influences over his theory of race. This is to say that one must avoid privileging "Athens" over "Jerusalem."[20] The omission of Christian influences over Blumenbach's thinking by Gould and Marks allow us to see how there are assumptions about which sources are legitimate influences over the development of scientific theories and therefore deserve a place within the historical record.

The temptation to omit the role that Christian ideas played in the "birth" of modern racial theories is quite powerful given prevailing assumptions about the secularization of European thought during the Enlightenment. Take for example the treatment of this issue by the historian of Reginald Horsman who wrote:

> [Though] Enlightenment thinkers stressed the unity and general improvability of mankind, they also accelerated the process of secularization of thinking which had begun in the age of discovery and in the scientific advances of the sixteenth and seventeenth centuries. Enlightenment philosophers defended the unity of mankind on non-Christian grounds and often challenged the traditional churches. By

[19] Jonathan Marks, *Human Biodiversity: Genes, Race, and History* (New Brunswick: Transaction Press, 2009), pp. 55.
[20] John Mark Reynolds, *When Athens Meth Jerusalem: An Introduction to Classical and Christian Thought* (Downers Grove: InterVarsity Press, 2009), pp. 20-23

> separating science from theology they opened the way for science to reach entirely different answers from those of the orthodox.[21]

Horsman goes on to add that Blumenbach was "influential in taking the study of mankind out of the realm of theologians and in making it a matter of physical comparison […] Blumenbach's fivefold division formed the basis of the work of the most influential writers on race in the first half of the nineteenth century."[22]

This commonly accepted rendition of Enlightenment theories of race says more about our present moment than it does about the eighteenth century. One wonders what secularization means within this view. It is true that the study of human descent moved into the German university in a bold new way during the eighteenth century. In this sense there was a structural secularization, with secular institutions taking the lead over intellectual matters once primarily in the hands of the church. But this transfer of responsibility should not be mistaken for a wholesale revolution in the most basic rudimentary ideas that framed how academic scholars thought of race compared to theologians. This is to say, that the elimination of the supernatural in modern explanations for human origins does not mean a wholesale rejection of what one might call habitual modes of apprehending nature from within a framework held together by Christian ideas. With regard to Blumenbach, one must ask did he posit that humans evolved from apes or claim that human life emerged from nature through chance? Did he believe human beings existed on the earth longer than the timeline delimited by the Bible? As we will see, Christian answers to these questions continued to prevail among thinkers of the Enlightenment like Blumenbach who are often believed to have opened

[21] Reginald Horsman, *Race and Manifest Destiny: The Origins of American Anglo-Saxonism* (Cambridge: Harvard University Press, 1981), pp. 46.
[22] Ibid., pp. 47-48.

"the way for science to reach entirely different answers from those of the orthodox." In the case of Blumenbach, the father of our modern racial anthropology, this is only partially true.

I content that the historiography surrounding Blumenbach's role in the development of modern racial science has fallen victim to what Michel Foucault, following Friedrich Nietzsche, called "the myth of pure origins." Foucault wrote that a critical (or what he called genealogical) understanding of history should teach us:

> How to laugh at the solemnities of the origin. The lofty origin is no more than 'a metaphysical extension which arises from the belief that things are most precious and essential at the moment of birth.' We tend to think that this is the moment of their greatest perfection, when they emerged dazzling from the hands of a creator or in the shadowless light of a first morning. The origin always precedes the Fall. It comes before the body, before the world and time; it is associated with the gods, and its story is always sung as a theogony. But historical beginnings are lowly: not in the sense of modest or discreet like the steps of a dove, but derisive and ironic, capable of undoing every infatuation.[23]

Foucault's warning about modernity's infatuation with the myth of historical beginnings takes on increased significance and irony given Blumenbach's designation by contemporary scholars as the father of modern scientific conceptions of race—or more pointedly modern scientific theories of human beginnings. The myth of pure origins has shaped how we think of Blumenbach within the historical development of modern racial theories. Blumenbach marks the beginning of secular reason taking over a domain once dominated by Christian theology. But the myth of pure origins is also constitutive of Blumenbach's theory itself. After all Blumenbach placed the pure white Caucasian as the father of all racial groups. But as I have already suggested and will demonstrate during this chapter, the birth of modern racial categories—insofar as Blumenbach is to be

[23] Michel Foucault, "Nietzsche, Genealogy, History" in, *The Foucault Reader*, ed. Paul Rabinow (New York: Pantheon, 1984), pp. 79.

understood as seminal for modern science—was not an expression of pure, untainted, secular rationality but was facilitated by longstanding Christian ideas about the place of human life in nature.

Indeed, Blumenbach's relationship to Christianity is far more complex than the common story of natural philosophy overcoming the religious roots of modern theories of human life in the wake of the Enlightenment. The literary historian M. H. Abrams has argued that the retention of Christian ideas among post-Enlightenment theorists of nature, human life, and society was instrumental for modernity's often overlooked endorsement of what he calls "natural supernaturalism."[24] Abrams wrote that:

> Secular thinkers have no more been able to work free of the centuries-old Judeo-Christian culture than Christian theologians were able to work free of their inheritance of classical and pagan thought. The process—outside the exact sciences at any rate—has not been the deletion and replacement of religious ideas but rather the assimilation and reinterpretation of religious ideas, as constitutive elements in a worldview founded on secular premises.[25]

I contend Blumenbach's theory of human origin and racial descent marks "the assimilation and reinterpretation of religious ideas" for a scientific theory "founded on secular premises."

In this chapter I make a case for how Blumenbach's theory of racial degeneration can be seen as a translation of the Christian narrative of human descent into naturalistic terms. This translation kept intact notions of common ancestry, mankind's supernatural origins, as well as the traditional Christian timeline of mankind's recent creation. In this chapter I also make an attempt to answer a question to be explored throughout the each of the chapters of this work: what exactly is a "Christian" account of race? Or more

[24] M.H. Abrams, *Natural Supernaturalism: Tradition and Revolution in Romantic Literature* (New York: W.W. Norton & Company Inc, 1971).
[25] M.H. Abrams, *Natural Supernaturalism*, pp. 13.

pointedly, are there basic framing ideas about nature, human life, which if absent, would render a racial theory "non-Christian" as Horsman put it, or alternatively "Platonic" rather than religious, as Stephen Jay Gould and Jonathan Marks have suggested?

To date John C. Greene has offered what has become a widely accepted description of what constitutes a "Christian" view of nature, which had implications for scientific accounts of race until the time of Darwin.[26] For Greene, the seventeenth century Christian naturalist John Ray is a paradigmatic expression of this Christian worldview. Ray assumed that nature was a fixed, teleological and purposive set of relationships that reflected God's benevolent wisdom.[27] This vision of nature, which was a synthesis of Christianity and the philosophy inherited by the medieval world from the ancient Greeks, assumed that God designed each species with all of the necessary attributes to survive and thus did not change or go extinct.[28] According to Greene, Darwin's claim that nature evolved and was riddled by chance and circumstance was a fundamental challenge to the Christian view of Nature and was ultimately responsible for the "death of Adam" within Western thought.

I believe the association between Christianity and a static, purposive view of nature is both helpful and limiting. The upside of this association is that it does capture how the religious imagination and scientific theories of race often worked together. We will see in this chapter that Blumenbach maintained a teleological view of nature that had clear resonances with Christian ideas about the place of human life in the natural world. In later chapters I show how ideas of fixed racial traits were a peculiar carryover from the

[26] John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought*, (Ames: Iowa State Press, 1977[1959]), pp. 4-5.
[27] Greene, *The Death of Adam*, pp. 5.
[28] Ibid., 5.

seventeenth century view of fixed species described by John Ray. The downside of this definition is that there is a danger of too strongly correlating Christianity with *stasis*—as though Christian thinking itself was incapable of changing with new theories about nature's dynamic inner workings. In fact natural historians and theologians who defended the biblical idea of common human descent during the eighteenth and nineteenth century embraced the idea of species change, albeit in moderate doses, in order to account for how racial differences came into being through natural or cultural causes.[29] Although their understanding of nature differed from that of John Ray, they retained and defended the Christian idea of common human origins and the uniqueness of human creation while in dialogue with modern science. In this regard, Blumenbach was part of the norm, and not an exception, as he also embraced the notion of species change to defend the idea of common human descent, yet retained the idea about the uniqueness of human creation in ways that had clear connections to the Christian creation narrative.

It is crucial that we acknowledge how Christian ideas change over time and that there is more than one way to defend or articulate Christian concepts (i.e., common human descent, human distinction from the animal world, recent human creation). At best there are several ways in which an idea could be Christian. I will explore this issue in more detail in chapter two where we will see in the antebellum South how American theologians and scientists thought about race and human descent in a variety of overlapping ways. For now, it is important that we are aware of the limits and dangers of imposing assumed differences between science and religion, or Christianity and Platonism, or even secularism and theology, upon the racial theories of eighteenth century thinkers like Blumenbach during the so-called "Age of Reason."

[29] Greene, *The Death of Adam*, pp. 221.

This dexterity in our own thinking allows us to see how the racial theories of intellectuals working within secular institutions and speaking in scientific terms could remain framed and structured by Christian ideas. My task in this chapter is to show how the "proto" ideas (to invoke Ludwig Fleck) of common human descent, human distinction from the animal world, and recent creation of human life—once nurtured almost exclusively by Christian theology—continued to frame and shape Blumenbach's widely influential racial theory.

This chapter begins by describing Blumenbach's contribution to shifting views of nature forged during the Enlightenment. Following the historian Peter Reill I show how Blumenbach was part of a group of late eighteenth century Enlightenment thinkers who challenged the Newtonian view of nature as a closed system of natural laws. Instead they argued that nature was a dynamic force capable of generating new life forms from inorganic matter. Showing Blumenbach's contribution to this "vitalistic" conception of nature helps explain his theory of formative force, which transformed the study of embryology and provided him a new language for describing the origin of human racial differences. Following this I then work through the details of Blumenbach's racial theory and draw out the connections between his understanding of racial descent and Christian notions of common human ancestry, recent human creation, and the uniqueness of human creation. In this task I situate Blumenbach's scientific theory within a larger social-cultural setting where late century German intellectuals in the academy, particularly in the University of Gottingen where Blumenbach taught for over fifty years, developed a pragmatic understanding of Christian thought that was useful for modern life and contributed to the nationalization of German racial identity. A key component of the new

cultural identity being forged during this time was the recovery and transformation of the Protestant Reformer, Martin Luther, into an icon of German national identity. Given this, I turn to Luther's translation of the Bible and his commentaries on the book of Moses in order to show the discursive parallels between the Christian creation narrative and Blumenbach's account of human racial origins. By providing a wider view of the social and cultural setting in which Blumenbach's scientific theory of race was constructed, I attempt to show how Blumenbach's attempt to secularize the study of human origins did not entail a wholesale rejection of Christian assumptions about the origin and descent of human life.

Enlightenment Perceptions of Nature

Near the end of the seventeenth century Christian naturalists such as Robert Boyle and Christian mechanists like Richard Bentley understood Nature to reflect God's wisdom and benevolence.[30] God was assumed to be directly responsible for the genesis of all organisms, which after their formation were maintained by natural law. Naturalists in Europe ultimately believed that in their classification of nature they were unearthing the structure and order of God's prescient plan for existence.[31]

During the "Scientific Revolution" Isaac Newton further rationalized this vision of nature as a law bound system. In what historians have called the "Newtonian worldview" Newton provided mathematical justifications for the idea that Nature was fundamentally a law-bound mechanistic structure. Using precise mathematical calculations of the inner workings of nature and the movement of the cosmos, Newton

[30] Jacques Roger, "The Mechanistic Conception of Life" in, *God and Nature: Historical Essays on the Encounter between Christianity and Science* ed. David Lindberg and Ronald Numbers (Berkeley: UC Press, 1986), pp. 286.
[31] Ibid., 286.

reasoned that God imbued all of existence with purpose, which was governed through immutable natural laws.[32] Matter itself was inert, passive, and wholly subject to the principles and natural processes established by God: the divine Architect. Naturalists who were inspired by the spirit of Newtonian science believed the central task of natural philosophy was to assimilate the methods and assumptions of formal mathematical reasoning into explanations for natural phenomenon.[33]

Yet by the middle of the eighteenth century, the mechanistic philosophy of nature lost favor with a younger generation of European intellectuals who questioned the central claims of the Newtonian worldview as well as its social implications.[34] As the historian Reill explains the view of nature as an inherently fixed system of meaning, "was very easily adapted during the eighteenth century to serve as a support for the status quo—for political absolutism, religious orthodoxy, and established social hierarchies."[35] The philosophical skepticism of figures such as David Hume, Voltaire, Comte de Buffon along with many other thinkers who were a part of the high and late Enlightenment, drew attention to the limited conception of nature and dangerous social implications of the methodological reductionism implicit within the Newtonian worldview[36] This skepticism raised important questions about the limits of human reason and the feasibility of reducing the complexity of nature's operations under the rubric a few universal laws.[37]

According to Reill, two strategies developed during the middle of the eighteenth century in response to the skeptical attitude affirmed by Hume and others. Neomechanists

[32] Ibid., pp. 277-295.
[33] Peter Hanns Reill, *Vitalizing Nature in the Enlightenment* (Berkeley: UC Press, 2005), pp. 5.
[34] Ibid., pp. 5.
[35] Ibid., pp. 5.
[36] Ibid., pp. 5.
[37] Ibid., pp. 5.

such as D'Alembart and Pierre-Simon Laplace developed a natural philosophy that limited the role of mathematics for describing nature. Although these Neomachanists continued to view nature as inert, they did, however, come to see mathematics as a tool for modeling nature as opposed to a direct apprehension of reality.[38] Neomechanists absorbed a healthy dose of skepticism concerning the limits of reason, as mathematical probability tempered the mechanistic tendency toward reductionism and absolutist truth claims.[39]

A second strategy was developed by a cluster of European intellectuals whose interests spanned across the fields of natural history, chemistry, the life sciences and medicine in the climate of questioning the Newtonian worldview.[40] These "Enlightenment Vitalists" rejected the mechanistic dichotomy between inert matter and mind.[41] In their view the assumption that nature was merely passive and devoid of "spirit" or "mind" did not properly account for the existence of living matter or the splendid diversity of life. They argued that matter was not inert and lifeless, but endowed with vitality. Enlightenment Vitalists claimed that active forces internal to matter itself were responsible for the self-organizing and regenerative abilities displayed by the simplest and the most complex living organisms.[42] Vitalists believed that the formative forces internal to living things were goal-oriented, in that organisms developed according to an internal teleology. This new conception of matter as active and dynamic brought about a new agenda for the study of natural philosophy. Naturalists who were attuned to nature's self-fashioning capabilities emphasized that all living things came into being

[38] Ibid., pp. 6.
[39] Ibid., pp. 6.
[40] Ibid., pp. 6.
[41] Ibid., pp. 6.
[42] Ibid., pp. 7.

over the course of developmental phases. Thus comparative analysis and analogical reasoning, as opposed to mathematical reductionism, became a crucial part of the methodological tool kit of Enlightenment Vitalists. They believed that these methodological innovations allowed them to discern hidden universal laws of growth or "epigensis" that dwelled within even the most diverse living forms.[43]

By the end of the eighteenth century Blumenbach became a leading advocate for a vision of natural philosophy that emphasized the vitality of life and valued comparative and analogical analysis. In fact Blumenbach would make a major contribution to the field of embryology, where naturalists were busy speculating about the origins of all living things. Nature, in Blumenbach's view, was an active and self-sustaining force. Life forms were brought to together by Nature's capacity for organizing life from the basic elements of matter. This new vision of nature would also provide Blumenbach with a new language for describing human descent.

Transformations in 18th Century Embryology

In the time between the "Scientific Revolution" and the Enlightenment the field of embryology was closely tied to the study of human origins. A key issue for naturalists was whether the embryos of mammals were preformed within the reproductive organs of their progenitors (specifically among females) or if embryos came into being over time as organic matter was organized through some natural force (epigenism). The emergence of "Enlightenment Vitalism" would eventually transform the study of embryology. Naturalists came to see organic matter as capable of organizing on its own and yielding new life forms. This understanding of nature as dynamic rather than inert and static

[43] Ibid., pp. 8.

would have profound implications for how naturalists accounted for the development of racial varieties.

During the seventeenth-century the Dutch insectologist Jan Swammerdam proposed a theory of embryo formation that argued the entire human race existed within the reproductive organs of mankind's first parents: Adam and Eve.[44] In this view adults pre-existed within the eggs found in a woman's womb. Male semen acted as a catalyst for bringing into being the adult form already encapsulated in a woman's egg. Swammerdam, who was a follower of an early occult form of Christian ecumenism, was compelled to explain how his theory of the preformation of mankind within Eve's womb accounted for how humans inherited original sin. He believed all humans were literally present within the loins of their original forefathers.[45]

Alternatively, there were naturalists in both seventeenth and eighteenth century who put forward an account of embryological development that stressed the ability of nature to organize organic material into complex structures, thus making preformation unnecessary. The English physician and early theorist of the human circulatory system, William Harvey, coined this theory "epigenism" based upon his observations of caterpillars.[46] At the center of Havery's explanatory model was the idea that embryos were not preformed but rather emerged out of a formless organic mass that gradually developed the structures and organs of specific species. During the eighteenth century the Swiss anatomist Albrecht von Haller made modifications to Harvey's theory.[47] Haller initially affirmed preformation, then realized epigenism was a more accurate explanation

[44] Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2002), pp. 211.
[45] Ibid., 211-212.
[46] Ibid., 212.
[47] Ibid., pp. 212-216.

after observing chicken embryos that appeared to develop from invisible but structured organic material. Looking to avoid a supernatural explanation for this development, Haller claimed that the seed and embryo contained pre-structured parts that changed into the organs of various species after gestation. Haller ultimately arrived at a theory of embryological development that drew from both preformation and epigenism. Haller claimed that living forms came to life as a result of a mechanical progression of antecedent organic parts but did not require a mysterious force to guide them.[48]

Charles Bonnet built upon Haller's attempt to revitalize some of the ideas within Swammerdam's account of pre-existing forms. Bonnet believed that entire populations were enclosed within minute germs. [49] Out of these original germs, various plant and animal lineages were formed and spread throughout the earth. According to the historian Robert J. Richards, Bonnet's expanded account of preformation, "presaged the transformation of ideas about embryological evolution into those of species evolution."[50] Bonnet's germ theory accounted for the development of embryos by relying on an explanatory framework that was theistic, teleological and clearly showed signs of being influenced by the theorems of plentitude and continuity implied within the Great Chain of Being.[51]

By the end of the eighteenth century, biologists began to move away from an account of embryological development that relied on preformation theory. In one of his earliest works, *Uber den Bildungstrieb und das Zeugungsgeschafte* (1781) (*On the formative force and the operations of reproduction)*, Blumenbach became a leading voice

[48] Ibid., pp. 213.
[49] Ibid., pp. 213.
[50] Ibid., pp. 215.
[51] Ibid., pp. 218.

in the critique of preformation, devising what was then understood as a radical form of organic vitalism to explain the gradual development of embryos from unorganized matter.[52] Blumenbach was initially partial to preformation theory in his earliest works on the generation of natural species.[53] His opinions, however, changed toward the end of the 1770s after vacationing in the countryside and observing various animal and plant species such as the hydra. His observations about the apparent regenerative capabilities of living organisms led him to conclude that inherent to nature was a formative force [*Bildungstrieb*] responsible for the reproduction, maintenance and restoration of the parts of living forms.[54] This *Bildungstrieb* was found within the genital fluid of living organisms and gave life to their offspring where "its first business" was to "put on the form destined and determined" for the species in question. After providing each organism with its species-specific form and constituent parts Blumenbach claimed that this formative force nurtured and preserved the organism. According to Blumenbach, "if by chance [an organism] should be mutilated, [it] lies in [*Bildungstrieb's*] power to restore it by reproduction."[55] For Blumenbach the *Bildungstrieb* was a teleological force inherent to nature that created species out of formless organic material.

Blumenbach's formative force gave him new insight into the development of embryos. The idea that Nature was equipped with a formative force that gave life to formless matter appeared a more plausible explanation for why animals of the same species produced varying forms and how hybrids from different varieties were possible. Blumenbach reasoned that these natural phenomena were not possible if each organism

[52] Ibid., pp. 216.
[53] Ibid., pp. 218.
[54] Ibid., pp. 219.
[55] Johann Friedrich Blumenbach, *On the Natural Varieties of Mankind* trans. Thomas Bendyshe (London: Longman, Green, Longman, Roberts and Green, 1865[1795]), pp. 194.

were already preformed within the womb of its progenitor. Also, unlike preformation theory, which posited organisms were pre-developed within the womb of the female, Blumenbach's theory of formative force was more equally weighted between both genders. It was the mixture of the formative force inherent to the seminal fluids of both males and females that led to the development of new life out of previously invisible organic material.[56] Blumenbach's theory of formative force enlarged the male's role in the genesis of life by moving beyond the idea that mankind was preformed within the womb of the female.

Blumenbach's Theory of Racial Descent

Blumenbach's theory of embryological development informed his account of racial diversity. In fact, Blumenbach used his theory of formative force to explain the emergence of new varieties and subspecies. In the second edition of *On the Natural Varieties of Mankind* (1781), Blumenbach claimed that deviations from the intended developmental pathways of living organisms were entirely possible and this explained why there were so many different animal and human varieties.[57] Methodologically, this work drew on analogies from mammals to account for the development of human varieties. Keeping with the spirit of developing empirically grounded explanations that obtained across the natural world, Blumenbach maintained that:

> We ought always to have before our eyes the two golden rules which the great Newton has laid down for philosophizing. First, that the same causes should be assigned to account for natural effects of the same kind. We must therefore assign the same causes for the bodily diversity of the races of mankind to which we assign a similar diversity of body in the other domestic animals which are widely

[56] Richards, *The Romantic Conception of Life*, pp. 218.
[57] Ibid., pp. 221.

> scattered over the world. Secondly, that we ought not to admit more causes of natural things than what are sufficient to explain the phenomena.[58]

By using the same explanation to account for human and animal diversity it may appear that Blumenbach believed that human and animal life were ontologically similar and therefore broke away from orthodox Christian beliefs regarding the supernatural origins of human life. As we will see below however, Blumenbach's theory of formative force did not claim that the origin of *all* humans are similar to that of mammals. The origin of the Caucasian, the first human type, was an exception to his theory.

But for now, it was clear that Blumenbach was able to draw on his observations of the animal world to make claims about human descent. He recognized that (in light of human diversity) Nature's formative force was ostensibly capable of turning "aside from its determined direction and plan."[59] Climate, diet, mode of life, hybridity (namely, the crossing of two separate species) and the passing on of hereditary diseases were all factors that could push an organism to deviate from a primeval type and develop novel varieties.[60] The idea that organisms were capable of deviating from an original type was an idea Blumenbach borrowed from Georges Louis Leclerc, comte de Buffon, and his work on the degeneration of animals published in 1766.[61] What was unique about Blumenbach's account of descent was his introduction of the concept of formative force to explain how original forms were maintained over time. He believed that extended periods of external stimuli on an organism "[have] great influence in sensibly diverting the [*Bildungstrieb*] from its accustomed path." This deflection was "the most bountiful

[58] Blumenbach, *On the Natural Varieties of Mankind*, pp. 190-191.
[59] Ibid., pp. 195.
[60] Ibid., pp. 194-205.
[61] Richards, *The Romantic Conception of Life*, pp. 221.

source of degeneration, and the mother of varieties properly so called."[62] In fact the longer the forces of degeneration acted on an organism "the more palpably that species may *fall* off from its primeval conformation."[63]

Blumenbach, however, made sure to note in *Natural Varieties* that not all organisms were equally prone to degeneration. According to Blumenbach "an otherwise sufficiently powerful cause of degeneration may be changed and debilitated by the accession of other conditions."[64] Degeneration could be accelerated or slowed by the climate and geography. This explained why the same species living in different environments expressed different features. Nearly forty years later Charles Darwin postulated a similar theory based upon his barnacle studies in the late 1850s.[65] Darwin developed a "principle of divergence" to explain the effect of climate and natural selection among descendents of the same species.[66] For Blumenbach, he also believed that there were features internal to an organism that might divert the *Bildungstrieb*, thereby inducing degeneration independent of the climate and environmental conditions. This explained why "the darker colour of peoples is not to be derived solely from the direct action of the sun upon the skin, but also from its more remote, as its powerful influence upon the functions of the liver."[67] In a move that seems to forecast the genetic causation theories of the twentieth century, Blumenbach claimed that population-specific features which disrupted *Bildungstrieb's* natural pathway appeared "to strike root all the

[62] Blumenbach, *On the Natural Varieties of Mankind*, pp. 196.
[63] Ibid., pp. 205.
[64] Ibid., pp. 205.
[65] Janet Browne, *Charles Darwin: The Power of Place* (Princeton: Princeton University Press, 2002), pp. 38-39.
[66] Ibid., pp. 38-39.
[67] Blumenbach, *On the Natural Varieties of Mankind*, pp. 205.

deeper, and so to be all the more tenaciously propagated to following generations."[68] In another effort to draw on mammalian analogies to explain the traits of the African type, Blumenbach reasoned that degeneration caused by population specific traits explained "why the brown colour of skin contracted in the torrid zone will last longer in another climate than the white colour of northern animals if they are transported toward the south."[69] The inference we are left to draw from this reasoning is that unlike the white human form, the black type—once obtained—was less inclined to change and further degeneration into other subtypes. It was as though Blumenbach believed the black skin of "Ethiopians" rendered them biologically static and inept as a source of novel living forms.

Blumenbach's explicit thoughts about each of the human varieties were fully elaborated in Section IV of the 1795 edition of the *Natural Varieties of Mankidn*. Here is where we can see the explanatory limits of Blumenbach's *Bildungstrieb* and his inability to grant the same ontological status to each race. It is important to recount Carl Linnaeaus' vision of race articulated during the middle of the eighteenth century. This allows us to understand the innovations Blumenbach introduced into the classification of mankind.

There was an eighteenth century adage that claimed "God created, Linnaeus arranged." Linnaeus held a Newtonian view of the natural world, where nature was a rationally ordained system of means and ends, and the prudence of the Creator was reflected in his creations.[70] Within this rational order, species were perfectly created for their environments and there was a delicate balance between organisms and their

[68] Ibid., pp. 206.
[69] Ibid., pp. 206.
[70] Greene, *The Death of Adam*, pp. 131.

habitat.[71] Thus nature for Linnaeus was a fixed but balanced system and it was the task of naturalists to describe the Creator's work according to its apparent and natural order—i.e., "Nature's method."[72] Against this backdrop, Linnaeus divided *Homo sapiens* into four varieties differentiated first by geography then by color, temperament, and bodily disposition.[73] The four geographic populations presented by Linnaeus were American Indians, Europeans, Asians, and Africans. These descriptions were not a hierarchal taxonomy but simply a descriptive classification. Blumenbach would be the first naturalist to rank and expand the human taxonomy.

For Blumenbach, human life began with the Caucasian. Using physical beauty as his guide, Blumenbach sought out the Georgian population near Mount Caucasus, thought to produce "the most beautiful race of men" where "all physiological reasons converge" on the idea that in this region "if anywhere, it seems we ought with the greatest probability to place the autochthones of mankind."[74] Contemporary Georgians functioned as "stand-ins" to represent this primeval form. We will see in chapter three and chapter four this analogical method of using the traits of contemporary populations to reconstruct what are assumed to be homogenous ancestral types endures within contemporary medical and behavioral science and has been particularly prominent within recent genetic studies of Neanderthal ancestry among living humans. For, now it is important to note that Blumenbach was a monogenist and believed every racial type descended from an original stock whose beauty and perfection appeared to be captured in

[71] Ibid., pp. 131.
[72] Ibid., pp. 131.
[73] Gould, *The Mismeasure of Man*, pp. 404.
[74] Blumenbach, *On the Natural Varieties of Mankind*, pp. 269.

the physical features of the Caucasians.[75] Blumenbach claimed there were several reasons for positing the white Caucasian as the original human type:

> For in the first place, that stock displays, as we have seen, the most beautiful form of the skull, from which, as from a mean and primeval type, the others diverge by most easy gradations on both sides to the two ultimate extremes (that is, on the one side the Mongolian, on the other the Ethiopian).[76]

Blumenbach essentially took the crania of the white Caucasian as the original crown of the human skull. At the same time, Blumenbach understood the white Caucasian to be the primeval human type because of skin color. Having already claimed that within the mammalian world the dark skin of animals was less resistant to degeneration and did not readily produce successive forms that were novel, Blumenbach reasoned that:

> It is the white in colour, which we may fairly assume to have been the primitive colour of mankind, since, as we have shown above, it is very easy for that to degenerate into brown, but very much more difficult for dark to become white, when the secretion and precipitation of this carbonaceous pigment has once deeply struck root.[77]

The white Caucasian was the original human form because the skulls of his or her living descendants (the Georgians) were the most aesthetically pleasing and symmetrical, and its skin readily changed into other hues.

The modifications Blumenbach made to the Linnaean racial taxonomy introduced profound changes in the way we currently think of continental populations. For the first time Blumenbach added a new racial classification, the "Malay," which accompanied the other four human types initially described by Linnaeus: American, African (Ethiopian), Asian (Mongolian), and European (Caucasian). Blumenbach arranged all of the existing human types into two lines of successive departure from his original Caucasian ideal,

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[75] Gould, *The Mismeasure of Man*, pp. 410.
[76] Blumenbach, *On the Natural Varieties*, pp. 269.
[77] Ibid., 269.

ending with what he took to be the two forms where Nature's formative force had deviated the furthest from the primeval type: Asians (Mongolian) on one end and Africans on another.[78] Blumenbach seemed to envision the distance between each of the races geometrically, with white Caucasians at the very top of some sort of triangle, leaving Asians and Africans positioned in the bottom left and right corners respectively.[79] When viewed objectively, the various races appeared as gradations of each other. In fact, Blumenbach found that among the different races there were no traits possessed by one group exclusively. He argued that, "no variety exists, whether of colour, countenance or stature so singular as not to be connected with others of the same kind by such an imperceptible transition, that it is very clear they are all related, or only differ from each other in degree."[80] In Blumenbach's theory of degeneration, nature did not make leaps between one species (or subtype) to another. Rather, he claimed that deviations from a primeval form were gradual, leaving behind a series of subtypes clearly linked back to an original stock. This meant that if mankind was to be reduced into its three most distinct groups (African, Asian, European), there must have been intermediate types between Caucasians and Asians, as well as between Caucasian and Africans—in insofar as Asians and Africans represented the most degenerate human forms. In Blumenbach's mind the American (Native American) was the intermediate form between Caucasian and Asian.

Here is the significance of Blumenbach's divergence from Linnaeus. Blumenbach argued that the Linnaean four-group racial typology (Native American, European, Asian, and African) was insufficient because it left a "missing link" between the Caucasian and

[78] Gould, *The Mismeasure of Man,* pp. 411.
[79] Stephan Jay Gould was the first to suggest Blumenbach organized each of the races geometrically. See Gould, *Mismeasure of Man*, pp. 411.
[80] Blumenbach, *On the Natural Varieties of Mankind*, pp. 264.

the African type. By devising the category Malay, Blumenbach claimed that there was a direct biological connection between Caucasians and Africans, and thus both groups belonged to the same species. Like the American, the Malay helped link the Caucasian to humanity's most divergent forms, leaving Blumenbach with a racial taxonomy that was coherent and symmetrical.

Blumenbach the Monogenist

During Blumenbach's time, naturalists and philosophers debated whether or not the range of human variation (encountered during the European colonial expansion) implied that human life was comprised of several different species and not simply subtypes. The works of figures such as Lord Henry Home Kames and Voltaire voiced a polygenic conception of human origins that claimed the physical and cultural differences between Africans and Europeans were too vast for both groups to belong to the same species.[81] In his 1766 work *The Philosophy of History* Voltaire argued that, "none but the blind can doubt that the whites, the negroes, the Albinos, the Hottentots, the Laplanders, the Chinese, the Americans, are races entirely different."[82] He went on to explicitly discuss the African, singling out "their round eyes, squat noses, and invariable thick lips, the different configuration of their ears, their woolly heads, and the measure of their intellects" which he claimed "make a prodigious difference between them and other species of men."[83] The stark and consistent differences seen in Africans suggested to

[81] Horsman, *Race and Manifest Destiny*, pp. 47-48.
[82] Francois-Marie Arouet de Voltaire, "Of the Difference Races of Men" from *The Philosophy of History* (1766) in, *The Idea of Race* ed., Bernasconi and Lott, (Indiana: Hackett Publishing, 2000), pp. 5.
[83] Ibid., pp., 5.

Voltaire and other polygenists that not all humans could have descended from a common stock.[84]

Drawing attention to Blumenbach's defense of monogenism is important because it reveals how Christian ideas helped organize how eighteenth century naturalists studied race scientifically. The belief in common human ancestry was undoubtedly an idea drawn from the story of Adam's creation in the first two books of Genesis and then later the descent of the human race from Noah's three Sons (Shem, Ham, and Japheth) in the ninth chapter of Genesis. For naturalists during Blumenbach's time the belief in common descent was a matter of defending both the biological, spiritual and moral unity of the races.[85] In his "Memoir of Blumenbach" the Parisian naturalist Pierre Flourens recognized the significance of Blumenbach's defense of common human ancestry. Flourens ended his memoir with the following passage:

> Blumenbach died on the 22nd Jan 1840, being nearly a century old; a man of a high intellect, an almost universal scholar, philosopher and sage, a naturalist, who had the glory, or rather the good fortune, of making natural history the means of proclaiming the noblest and without doubt, the highest truth that natural history ever had proclaimed, The Physical Unity, and through the physical unity the moral unity, of the human race.[86]

It is therefore important to see Blumenbach's defense of common human descent as more than simply a scientific position, but also a moral and spiritual stance that has clear ties to the formative influence of Christianity over the discipline of natural history. We must be careful not to overly secularize this period. Blumenbach's defense of racial unity did not

[84] Horsman, *Race and Manifest Destiny*, pp. 47-48.
[85] Greene, *The Death of Adam*, pp. 221.
[86] Pierre Flourens, "Memoir of Blumenbach" in, *The Anthropological Treatise of Johann Friedrich Blumenbach* trans. Thomas Bendyshe (London: Longman, Green, Longman, Roberts and Green, 1865[1847]), pp. 63.

carry the more forcefully secular undertones of Darwin's common human descent from primates written nearly a hundred years later.

Blumenbach explicitly wrote the *Natural History of Mankind* to refute the claims of polygenists and to do so by using naturalistic explanations—as we saw earlier with his invocation of Newton's rules of explanatory consistency. In his explicit rejection of the claims of Voltaire, Blumenbach uses the theory of the continuity of forms—implied in the Great Chain of Being—to buttress his defense of monogenesis. For example, Blumenbach took care to refute the claims about the distinctiveness of African traits, arguing that:

> This variety, principally because it is so different in colour from our own, has induced many to consider it, with the witty, but badly instructed in physiology, Voltaire, as a peculiar species of mankind. But […] there is no single character so peculiar and so universal among the Ethiopians, but what it may be observed on the one hand everywhere in other varieties of men; and on the other that many Negroes are seen to be without each.[87]

So-called African traits appear in other groups. This dispersion of traits suggest a common source. Blumenbach goes further to add that:

> there is no character which does not shade away by insensible gradation from this variety of mankind to its neighbours [*sic*], which is clear to everyone who has carefully considered the difference between a few stocks of this variety, such as the Foulahs, the Wolufs, and Mandingos, and how by these shades of difference they pass away into Moors and Arabs.[88]

For Blumenbach, a naturalistic account of common human descent was contingent not simply on demonstrating the shared traits between each of the races, but also hinged on the ability of naturalists to demonstrate one of the key principles of the Great Chain of Being: that each living organism possesses traits that approach those of the next variety.

[87] Blumenbach, *On the Natural Varieties of Mankind* pp. 270-271.
[88] Ibid., 271.

At this time the argument for polygenism rested on the claim that traits such as intellect, moral capacity, skin, and hair were not shared across the different races—particularly between the African and the European. Polygenists like Voltaire claimed that the different races of men corresponded to different species. Blumenbach's addition of the "Malay" provided the link between Africans and Europeans and his claim that the races indeed did share traits shored up a widely held belief among eighteenth century naturalists in the continuity of living forms. The key here is that Blumenbach's defense of monogenism only made sense against the assumption that Nature did not make leaps between living forms and thus the traits of one subset of humans were shared with its closest neighbors.

Readers might object to my attempt to situate Blumenbach's account of racial difference within the logical framework of "The Great Chain of Being." After all, Blumenbach himself raised criticisms about the obstacles the chain of being metaphor posed to classifying species according to "natural methods"—which he defined as sound empirical observation based on focused detail. Blumenbach wrote, for example, in a letter addressed to the English naturalist Sir Joseph Banks:

> I am indeed very much opposed to the opinions of those who, especially of late, have amused their ingenuity so much with what they call the continuity of nature; and have sought for a proof of the wisdom of the Creator, and the perfection of the creation of the idea, as they say, that nature takes no leaps, and that the natural productions of the three kingdoms of nature, as far as regards their external conformation, follow one upon another like the steps in a scale, or like points and joining in a chain. But those who examine the matter without prejudice, and seriously, see clearly that even in the animal kingdom there are whole classes on the one hand, as that of birds, or genera, as that of cuttle-fish, which can only be joined on to the neighboring divisions in those kinds of plans of the gradation of natural productions but indifferently and by a kind of violence. […] And in this kind of systems, so far from their being filled up, there are large gaps where the animal kingdoms are very plainly separated one from another. […] I cannot

> altogether recognize so much weight and importance in this doctrine of the gradation of nature, as is commonly ascribed to it by the physico-theologians.[89]

On the surface Blumenbach may appear to be finding great fault with the "Chain of Being" framework. But upon closer inspection it is clear that he does not call for the abandonment of the core idea of species interrelatedness. In fact, he recuperates this central tenant. Blumenbach claimed that:

> Still I will allow [continuity of nature] to belong to both these metaphorical and allegorical amusements, [as it does not] throw any obstacle in facilitating the method of the study of natural history. For [the continuity of nature] makes, as it were, the basis of every natural system, the way things rank according to their universal condition, and the greatest number of external qualities in which they coincide with each other, whereas the artificial systems, on the contrary, recognize single characters only as the foundation of their arrangement.[90]

For Blumenbach the notion of the Great Chain of Being could continue to be used by naturalists only as a metaphor or heuristic for guiding their observations about nature. One would be in error to assume, however, that a Great Chain actually exists in nature; that *a priori* assumptions about the order of Nature necessarily exist. Unlike Blumenbach's vitalistic account of nature, the early racial taxonomy of Carl Linnaeus reflected a previous generation's commitment to a Newtonian worldview that was overly confident in the correspondence between human conventions to describe the world (i.e., mathematics or the assumption of a few underlying principles that give order to nature) and reality.

In his letter to Sir Joseph Banks, Blumenbach was concerned that the "Chain of Being" metaphor was preventing naturalists from taking stock of all the nuances of species traits that differentiate the various plant and animal forms. Blumenbach was an

[89] Blumenbach, "Introductory Letter to Sir Joseph Banks" in, *On the Natural Variety of Mankind* (1795) pp. 150-151.
[90] Ibid., pp. 151-152.

armchair empiricist, who had an eye for cataloguing in meticulous detail the characteristics of novel plants and human types collected by European colonial explorers to the New World. His attention to detail was particularly apparent in *On the Natural Varieties of Mankind,* which is filled with data about human variation. Here he classifies human differences such as the splaying of toes, diseases of the mind and skin, lactation, bodily stature, ear morphology, hair texture, and of course skull shape. Although Blumenbach took stock of these differences he still affirmed the fundamental interconnection of all living beings.

Nowhere was this truer for Blumenbach than in the human species. Blumenbach monogenist inclinations would not allow the possibility of separate and unrelated human types. The great "Chain of Being" metaphor and the Christian idea of monogenesis were complementary notions within the mind of Blumenbach. Again, Blumenbach wrote that:

> Innumerable varieties of mankind run into one another by insensible degrees. […] We have not found a single one which does not […] even among other warm blooded animals, especially the domestic ones, very plainly, and in a very remarkable way, take place as it were under our eyes, and deduce its origin from manifest causes of degeneration; so […] no variety exists, whether of colour, countenance, or stature, &c. [*sic*], so singular as not to be connected with others of the same kind by such an imperceptible transition, that it is very clear they are all related, or only differ from each other in degree.[91]

It is crucial to emphasize his point that the "varieties of mankind run into one another" while no variety can exist without being "connected with others." Here Blumenbach clearly relies on the logic of the "Great Chain of Being" and not simply on a Platonic theory of forms, in order to defend the biblically based claim of monogenesis. Thus in my reading of Blumenbach I agree with John C. Green, who wrote that:

[91] Blumenbach, *On the Natural Variety of Mankind* pp. 264.

> Despite his emphasis on the susceptibility of the human constitution to modification by environmental influence, Blumenbach never doubted the fixity of species. His major purpose as an anthropologist was to demonstrate the biological unity of mankind by showing that the range of variation among human beings was no greater than that in animal species generally. That variation might proceed so far as to produce new species of either men or animals he would not concede. Despite his talk of geological revolutions, despite his censure of the advocates of design for carrying their illustrations of divine contrivance to the point of absurdity, despite his frank acceptance of new species, he never seriously questioned the traditional concept of nature as a stable framework of structures fitted as a stage for the activities of intelligent beings.[92]

Even with his explicit reservations about the "Chain of Being" metaphor Blumenbach's account of human variation continued to be framed by the Christian ideas of common human descent and the interconnectivity of all living beings.

Thus Blumenbach's commitment to common human descent shows that his thinking about race was not an expression of pure secular rationality freed from the restrains of Christianity. Instead Blumenbach's thinking was caught between a Christian framework that theorizes the links between all of the differences that exist between human types, and a burgeoning post-Newtonian worldview interested in the methods of empirically grounded scientific naturalism. Blumenbach's criticism of the "Chain of Being" logic is an instance of what the philosopher of science Ludwig Fleck called a "signal of resistance" within a particular thought collective. When ideas coalesce to give meaning to a particular scientific subject matter—in this case ideas relevant for the study of "man"—they are maintained by facts that constrain thought and impart a particular style of thinking.[93] Privileged ideas and facts are closely related and work to reinforce one another. For Blumenbach the idea of common human descent was an idea reinforced by the fact that racial characteristics appeared widely dispersed across human groups—as

[92] Greene, *The Death of Adam*, pp. 228.
[93] Ludwig Fleck, *Genesis and Development of a Scientific Fact* trans. Fred Bardley and Thaddeus J. Trenn (Chicago: University of Chicago Press, 1979[1935]), pp. 101.

opposed to appearing concentrated solely within one race. In this instance the idea of common descent shaped a style of reasoning that came to see the fundamental connection between different racial traits. Much like the muscular form of a living body, Fleck believed facts have the power to structure the movement of thought on a given subject matter. [94] For eighteenth-century natural historians, the Christian discourse of common human descent was a "fact" that had a tremendous power over how naturalists reconciled human differences. According to Fleck, when new discoveries push the limits of the facts within a thought pattern, a "signal of resistance" emerges. Scientists are often able to recognize this signal as a threat to the coherence of a given thought pattern. In Blumenbach's case, the sheer volume of new human forms with varying degrees of similarity and difference demanded that the idea of human relatedness and common descent be further nuanced. As Fleck explains, "The less interconnected the system of knowledge, the more magical it appears and the less stable and more miracle-prone is its reality." [95] As it turns out, Blumenbach's critique of the "Great Chain of Being" (with his call for more attention to empirical detail) actually had the effect of reinforcing the privileged idea of common human descent, saving it from the criticisms of polygenists who saw this belief as untenable.

In the beginning there was the Caucasian…

There is, however, another key facet to Blumenbach's theory of racial descent where Christian ideas loomed large. It is clear that Blumenbach's intentions in *On the Natural Varieties of Mankind* were to use his theory of formative force to argue that all of

[94] Ibid., pp, 102.
[95] Ibid., pp. 102.

the varieties of mankind belonged to the same species. But there is a disparity in the ontological status that Blumenbach attributes to white Caucasians compared to the other races. According to Blumenbach's theory all of the "colored" races could be linked back to the first human type: the white Caucasian. But if human varieties were created through a process of degeneration from a primeval type, from what variety did the white Caucasian degenerate? When searching for an answer to this question one begins to see very large omissions within Blumenbach's theory of degeneration. These omissions say quite a bit about the influence of Christianity over Blumenbach's conception of human origins.

To see this we first have to recognize that in Blumenbach's theory of formative force Nature created living organisms out of previously unorganized organic matter. This was true even in the development of life during what was called the pre-Adamite world.[96] By the end of the eighteenth century Christian geologists and biblical scholars had come to see that the history of the earth (natural history) was far more ancient than what Christian chronologists, like as James Ussher, discerned using the Bible during the previous century.[97] This was a position that eighteenth-century naturalists arrived at following the discovery of fossils deep within the layers of the earth's crust.[98] As a result, thinkers began to view the creation narrative in the Bible as a metaphorical, rather than literal, account of the earth's creation. This gave naturalists more leeway to reconcile

[96] Blumenbach, *Contributions to Natural History* trans. Thomas Bendyshe (London: Longman, Green, Longman, Roberts and Green, 1865[1811]), pp. 287.
[97] Martin J. S. Rudwick, "The Shape and Meaning of Earth History" in, *God and Nature: Historical Essays on the Encounter between Christianity and Science* ed., D. Lindberg and R. Numbers (Berkeley: UC Press, 1989), pp. 308-309.
[98] James R. Moore, "Geologists and Interpreters of Genesis in the Nineteenth Century", *God and Nature: Historical Essays on the Encounter Between Christianity and Science* ed. Lindberg and Numbers (Berkeley: UC Press, 1986), pp. 322-325.

scripture with the new theories about the age and formation of the earth.[99] The most notable position developed as a result of this reconciliation was that the earth existed several millennia before the creation of the first man. Like most of his contemporaries Blumenbach understood the earth to be hundreds of thousands of years old but remained a traditionalist when it came to his understanding of the recent creation of human life.[100] This is to say that Blumenbach held a progressive view of the earth's history but did not develop a theory of human development that challenged the Ussherian chronology for the length of time humans were believed to have lived on the earth—which was still understood to be less than six thousand years. The implications of Blumenbach's commitment to the Christian idea of recent human creation will be discussed shortly. For now it is important to note that Blumenbach affirmed a division between earth history (based on geological evidence) and human history (based on Scripture), which was widespread among European and American naturalists until the publication of Darwin's *Origin of Species*.[101] This division of history is apparent in Blumenbach's account of the formation of the earth.

Much like his theory of embryology, Blumenbach claimed that during the first creation of the earth and its inhabitants, Nature's formative force gave shape to life out of formless organic matter.[102] Blumenbach wrote that once the:

> Preadamite primitive epoch of our planet had fulfilled its purpose, it was destroyed by a general catastrophe of its surface or shell, which probably lay in ruins some time until it was put together again [and] enlivened with a fresh vegetation, and vivified with a new animal creation. In order that it might provide such a harvest, the Creator took care to allow general powers of nature to bring

[99] Ibid., pp. 322-325.
[100] Greene, *The Death of Adam,* pp. 235-238.
[101] James R. Moore, "Geologists and Interpreters of Genesis in the Nineteenth Century", pp. 322-325.
[102] Blumenbach, *Contributions to Natural History*, pp. 283-285.

> forth the new organic kingdoms, similar to those, which had fulfilled that object in the primitive world.[103]

Following the first global catastrophe, Blumenbach argued that nature's formative force retained some sort of living memory of the first organisms and drew upon these forms to create new varieties. Blumenbach claimed that:

> The formative power of nature in these remodelings [*sic*] partly reproduces again creatures of a similar type to those of the old world, which however in by far the greatest number of instances have put on forms more applicable to others in the new order of things, so that in the new creatures the laws of the formative force have been somewhat modified.[104]

New species, in this theory, were derived from antecedent creations whose forms functioned as a template for the creative powers of Nature's formative force. All of the plants and animals thriving at the time of Adam's creation were essentially degenerations from the forms that were found in the pre-Adamite world.

We arrive here at a key tension within Blumenbach's theory. Humans were obviously not present during the first iterations of life on earth. Consequently there was no template from the pre-Adamite world for nature to draw upon in the creation of the first human. In fact, Blumenbach argued in his work *Contributions to Natural History* (1790-1811) that the first human was a naturally domesticated species. He arrived at this position after his critical study of "Peter the wild." Peter was a mute and highly unsocialized child who gained attention among eighteenth century naturalists across Europe because he was thought to resemble "man-in-nature."[105] Yet in Blumenbach's eyes, Peter was simply a mentally disabled individual who had been abused at a young

[103] Ibid., pp. 287.
[104] Ibid., pp. 287.
[105] Greene, *The Death of Adam*, pp. 213-216

age and not properly assimilated into the virtues of civilization.[106] Humans, Blumenbach asserted, possessed within his lineage no antecedent primitive form. The first human was a domesticated species where "his Creator has therefore fortified him with the power of reason and invention, in order that he may accommodate himself" to the "variety of climate, soil and other circumstances" that shape the human form.[107] Natural domestication was the birthright of the first human being.

By eliminating the possibility that humans evolved or developed up from a primitive state into civilization, the question still remains: how did Blumenbach account for the creation of the first human form (i.e., the white Caucasian)? If humans did not evolve from the animal world but were naturally domesticated, how does Blumenbach explain human origination? Nowhere in the *Natural Varieties of Mankind* does Blumenbach provide a clear answer. This is certainly odd, given contemporary claims that Blumenbach took the study of human life out of the hands of theologians and into the realm of scientific inquiry. Christian theology surely had its own account of human origination. Yet this is one of the most overlooked problems within Blumenbach's theory of race: his theory lacked a secular account of human origins. Instead of an explanation for how the first human came into existence we find the "Caucasian variety" arbitrarily designated as the "autochthones of mankind"—the original human species.[108] To be clear, positioning the white Caucasian as the first human is not an explanation for how this original form came to be. Rather this designation is a starting point for explaining how other races came to pass from an original form. We can see this in Blumenbach's own thinking as he wrote that, "it is the white in colour, which we may fairly assume to

[106] Blumenbach, *Contributions to Natural History*, pp. 329-340.
[107] Blumenbach, *On the Natural Varieties of Mankind*, pp. 183.
[108] Blumenbach, *On the Natural Varieties of Mankind*, pp. 269.

have been the primitive colour of mankind since […] it is very easy for that to degenerate into brown, but more difficult for dark to become white."[109] Although degeneration could explain ethnic variation within the European race (i.e., differences between Germans and French), this naturalistic theory—by virtue of its own assumptions about descent from antecedent forms—could not explain the birth of the original white Caucasian. Simply put, Blumenbach's theory of human descent was not designed to account for the origin of the first human form. Rather it was designed to explain the development of the racial differences that appeared following the origination of the first human. If mankind was a naturally domesticated species with no antecedent form in the pre-Adamite world, then Blumenbach's theory of degeneration could not logically apply to the creation of the first human. Creation through degeneration, according to Blumenbach's theory, requires an initial developmental pathway from which nature's formative force can be diverted. In other words, an original human form must come before racial varieties. According to Blumenbach's own theory, however, humans were not a part of the pre-Adamite world that had been destroyed and refashioned before the birth of Adam. Unlike other animals and other human races, white Caucasians did not come into being through a process of descent from antecedent forms. They were the original human form. Thus the birth of the Caucasian—Adam, the "primeval human type," the "most perfect of all domesticated animals," the "non-Ape-man"—was an exception to Blumenbach's theory of creation through degeneration. The trouble, however, is that Blumenbach is not explicit about how the creation of the Caucasian is an exception to his theory.

[109] Ibid., pp. 269.

Was Blumenbach a Lutheran on the Question of Human Origins?

Thus, with no clear explanation for how the first human form came to pass, we must look elsewhere for clues as to what Blumenbach believed on this issue. One important place to begin is Blumenbach's understanding of the inherent design of the natural world, as this would help clarify whether he believed the traits of the first human to be mere coincidence or ordained. This difference would certainly matter to Blumenbach because of his insistence that humans were naturally domesticated. In his *Contributions to Natural History*, Blumenbach actually claimed that natural kinds and their unique characteristics were not a matter of chance or mere utility. Rather they were designed according to final purposes. For Blumenbach, this was clear to "anyone who has ever had the opportunity of comparing the interior structure of any animal" and observed the "pre-established harmony, as it may easily be called, between the purposed structure of creatures and their mode of life."[110] Moreover, Blumenbach believed there to be "hundredfold proofs which may be deduced from comparative anatomy" to dispute the claims of those "who supposed that the animal structure was not ordained for its functions, but that the occupations of animals were only the mere consequence of their organization."[111] Blumenbach's affirmation of a teleological view of natural kinds and the hand of the creator inscribed in their specific traits, puts into sharp relief the larger framework surrounding his naturalistic theory of race: Blumenbach was a man of science whose thinking still reflected Christian assumptions about the place of human life in nature and human history.

[110] Blumenbach, *Contributions to Natural History*, pp. 323.
[111] Ibid., pp. 323.

The relationship between traditional Christian assumptions and Blumenbach's racial theory can be understood if we rethink the cultural influences shaping scientific thought during his time. One must keep in mind the central role that Gottingen University played in refashioning German racial identity over the course of the eighteenth and early nineteenth century. [112] The Germanization of Christian thought was a key component of this project of nationalization—indeed a project that involved reducing the "Jewish" elements of Christian faith and turning the Bible into a German cultural artifact. Moreover, the positioning of biblical studies and theology within secular institutions like Gottingen allowed these fields to stand free of orthodox concerns while remaining "practical" for modern issues.[113] This in turn provided the conditions for the pollination of idea across disciplines, where historians drew from biblical studies, and biblical scholars and theologians drew from the methods and insights of philology and classical studies.[114] Blumenbach forged his theory of human descent in this setting of German nationalization and interdisciplinary exchange among an enlightened faculty that sought to make anew the traditions of the past.

Also part of the cultural context in which Blumenbach wrote his theory of human beginnings was a surging interest among intellectuals in the Protestant Reformer Martin Luther. According to the historian Jonathan Sheehan, renewed appreciation for Luther's work also helped transform the cultural and racial identity of Germany during the time of the Enlightenment.[115] By the end of the eighteenth century—during the time which Blumenbach revised *On the Natural History of Mankind*—German intellectuals such as

[112] Legaspi, *The Death of Scripture and the Rise of Biblical Studies*, pp. 39-43.
[113] Ibid., pp. 39-43.
[114] Ibid., pp. 45-50.
[115] Jonathan Sheehan, *The Enlightenment Bible: Translation, Scholarship, Culture* (Princeton: Princeton University Press, 2005) pp. 174-175.

Frederich Herder and Johann Gottfried Eichhorn helped transform Martin Luther's commentaries and translation of the Bible into a piece of German national literature.[116] Sheehan writes that "it was not so much that the intelligentsia 'were catching up with the people' in their appreciation of this standard text, but rather that the 'folk' aspects of the Luther Bible were valorized by a generation of poets and scholars questing for an authentic biblical treasury of the nation."[117] Blumenbach would have certainly read Luther's translation of the Bible, having been raised in a Lutheran household.[118] Moreover, Blumenbach's silence on the question of human origination and his positioning of the first human in Georgia—again, a move also made by the German biblical scholar Johann Michaelis, who looked to remove the influence of Jewish mysticism in readings of the Bible—leads me to believe that Blumenbach would have also likely affirmed the cultural significance of Luther's writings for the project of German nationalization, like many of his colleagues near the end of the eighteenth century. With this in mind, I believe Blumenbach's account of common human descent from the white Caucasian can be understood as part of a larger effort to "secularize" elements of Christian thought to solidify the cultural and racial identity of Germany. Secularize, in this instance, does not mean a wholesale rejection of Christian thinking about human life, but rather a translation of Christian concepts into non-religious terms. In this translation key components of Christian discourse remained operative in Blumenbach's account of human racial beginnings.

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[116] Ibid., pp. 175.
[117] Ibid., pp. 176.
[118] "Blumenbach, Johann Friedrich." Complete Dictionary of Scientific Biography. 2008. *Encyclopedia.com*. 5 Apr. 2012 <http://www.encyclopedia.com>.

Turning to Luther's work on the Bible, one in fact finds parallels between his and Blumenbach's thinking about common human descent. In Luther's translation of the Bible, Moses 2:7 explains that God created the first man, Adam, out of "the dust of the ground, and blew the breath of life into his nostrils. And man became a living soul."[119] In the first creation narrative, Adam's inception comes only after many days of formation where the world was given shape and inhabited by plant and animal species (Moses 1:1-26). God's image is reproduced in Adam "And God said let us make man in our image" (Moses 1:26). The reproduction of the divine image onto the human is the unique birthright that distinguishes human life from all antecedent creatures that populated the pre-Adamite world (Moses 1:26-28). The Genesis narrative explains that the Creator's intentions for Adam were twofold. Adam was to name and have free use of all the living creatures on the earth (Moses 1:28). But most importantly Adam, along with his female counterpart were to live in the Garden of Eden, freed from the knowledge of good, evil, and death (Moses 2:8-9).

God's benevolent intentions for the first man and woman are diverted after Adam's wife eats from the forbidden tree of knowledge (Moses 2:1-7). In their tragic "Fall" from grace the first man and woman are cast out of Eden and dealt two separate punishments. God first punishes Eve, claiming "I will greatly multiply pain, if you are pregnant, you shall bear children with pain and thy desire shall be to thy husband, and he shall rule over thee (Moses 2:16)"[120] Eve was condemned to being subject to Adam's dominion, much like the animal world, and charged with the burden of giving birth to

[119] (Moses 2:7): Und Gott der HERR machte den Menschen aus einem Erdenkloß, uns blies ihm ein den lebendigen Odem in seine Nase. Und also ward der Mensch eine lebendige Seele.
[120] (Moses 2:16): Und zum Weibe sprach er: Ich will dir viel Schmerzen schaffen, wenn du schwanger wirst; du sollst mit Schmerzen Kinder gebären; und dein Verlangen soll nach deinem Manne sein, und er soll dein Herr sein.

Adam's offspring. Adam is forced to labor the ground of a barren earth for his subsistence and cursed to return to the dust out of which he was formed.[121] Only after the "Fall" does Adam call his wife Eve, whose namesake, according to the Luther's translation, corresponds to her burden as "the mother of all living" (Moses 3:20).[122] Cain and Abel are the first sons of the human race, born shortly after Adam and Eve have been forced out of the Garden of Eden (Moses 4:1-2).[123]

Luther's account of the Christian creation story of the birth and fall of mankind is mirrored in the logic of Blumenbach's theory of human degeneration from the white Caucasian. Nature's latent formative force [*Bildungstrieb*] miraculously gave shape to the human form after populating the earth many times with plant and animal life. Europeans are the primeval human type, a "naturally domesticated species"[124] whose "stock displays […] the most beautiful form of the skull, from which, as from a mean and primeval type, the others diverge by most easy gradations on both sides to the ultimate extremes (that is, on the one side the Mongolian, on the other the Ethiopian)."[125] The Caucasian is a perfect form out of which all other humans have degenerated. Yet unlike the other races, no other human form precedes the white European. The Americans, Africans, Malay, and Mongolians come into being after the Caucasian primeval human type deviates from the intended pathway of Blumenbach's omnipresent formative force. Blumenbach reasoned "it is [*sic*] white in colour, which we may fairly assume to have been the primitive colour

[121] (Moses 3:19): Im Schweiße deines Angesichts sollst du dein Brot essen, bis daß du wieder zu Erde werdest, davon du genommen bist. Denn du bist Erde und sollst zu Erde werden.
[122] (Moses 3:20): Und Adam hieß sein Weib Eva, darum daß sie eine Mutter ist aller Lebendigen.
[123] (Moses 4:1-2): Und Adam erkannte sein Weib Eva, und sie ward schwanger und gebar den Kain und sprach: Ich habe einen Mann gewonnen mit dem HERRN.
[124] Blumenbach, *Contributions to Natural History*, pp. 294.
[125] Blumenbach, *On the Natural Varieties of Mankind*, pp. 269.

of mankind, since […] it is very easy for that to degenerate into brown."[126] He went further to claim that it was nearly impossible for those non-Europeans furthest from the Caucasian primeval type—that those farthest from God's image mirrored in man—to return to the physical form of their Caucasian forbearers. Blumenbach believed that "the proximate cause of the "[dark] or tawny colour of the external integuments of the skin, is to be looked for in the abundance of the carbon in the human body."[127] Blumenbach believed that once this "carbonaceous pigment has [deeply] struck root" it is "very much more difficult for dark to become white."[128] Blumenbach was so confident that black skin could not return to white that he wrote "we must not be surprised if [Ethiopians] propagate unadulterated, even under another climate to succeeding generations, the same disposition which has spread such deep and perennial roots in their ancestors from the most distant antiquity."[129] This disposition of "dark skin" appeared to Blumenbach as a fixed racial trait, thereby making it "a miracle" for present day Europeans "to contract the Ethiopian habit of body."[130]

Blumenbach's idea of human deviation from the white Caucasian—Nature's original human type—appears to be the secular corollary to Luther's idea that humans lost the image of God following Adam's original sin. In his commentaries on the book of Genesis, Luther wrote that God's original intentions for human life in Paradise, what he called "the glory of the divine image," were distorted by Adam's original transgression against the will of God.[131] Luther reasoned that "through sin and that awful fall not only

[126] Ibid., pp. 269.
[127] Ibid., pp. 211.
[128] Ibid., pp. 269.
[129] Ibid., pp. 212.
[130] Ibid., pp. 212.
[131] Martin Luther, "Genesis 1:26" in, *Luther's Works Vol. 1 Lectures on Genesis Ch. 1-5* trans George V. Schick (Saint Louis: Concordia Publishing House, 1958[1535-1545]) pp. 65.

our flesh is disfigured by the leprosy of sin, but everything we use in this life has become corrupt."[132] In Blumenbach's thinking one finds parallel language of physical change of the human form occurring after human deviation—indeed, "a fall"—from the original human type. Blumenbach claimed, "a species may fall off from its primeval conformation."[133] With regard to mankind, all colored races where deviations from the original white Caucasian form, "the most beautiful race of men."[134]

The inheritance of universal sin was one of the major theological stakes of the eighteenth-century debate between monogenists and polygenists.[135] If human varieties were not all derived from Adam, this put into jeopardy the truth of the Bible, the universal inheritance of Adam's original sin, and the significance of Jesus Christ as the redeemer of all human beings. Indeed, eighteenth-century skeptics, most notably Voltaire, asked how could orthodox Christianity be the universal truth if all humans were not the descendants of Adam and therefore did not inherit his original sin?[136] Blumenbach, one of the century's staunchest defenders of monogenesis, was no doubt aware that his theory of formative force remained in step with the biblical anthropology and a Christian vision of history. In fact, one can hear God's punishment of Eve as the "mother of all living" (Gen 3:20) reverberate in Blumenbach's claim that deviations from nature's formative force was "the mother of varieties properly so called."[137]

Thus the notion of shared human inheritance was equally important for the biblical anthropology detailed by Luther as it was for Blumenbach's account of racial

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[132] Ibid., pp. 64.
[133] Blumenbach, *On the Natural Varieties of Mankind* pp. 205.
[134] Blumenbach, *On the Natural Varieties of Mankind*, pp. 269.
[135] Greene, *The Death of Adam*, pp., 221
[136] David Livingstone, *Adam's Ancestors: Race, Religion and the Politics of Human Origins* (Baltimore: Johns Hopkins University Press, 2008), pp. 42-43.
[137] Blumenbach, *On the Natural Varieties of Mankind*, pp. 196.

degeneration. Both Luther and Blumenbach believed that present-day humans have only a partial understanding of the all the features and qualities of the original human. According to Luther, not only has mankind's physical form been altered since the "Fall" but humans have also lost the "exceedingly important gifts" once possessed by Adam: "namely, a perfect knowledge of the nature of the animals, the herbs, the fruits, the trees, and the remaining creatures."[138] The consequences of Adam's transgression were passed down to all of his descendants, who lived in a "fallen state" of nature. Luther wrote that God's image in mankind "was so obscured and corrupted that we cannot grasp it even with our intellect."[139] According to Blumenbach, "no one knows the exact original wild condition of man."[140] Blumenbach offered no reasons for this claim, only an unsubstantiated belief that "mankind was a naturally domesticated species."[141] Among his contemporaries Blumenbach's claim of natural human domestication was unique. Comte de Buffon, Jean-Jacques Rousseau, and James C. Prichard all professed an account of human descent that claimed humans emerged out of a state of primitivism and developed into a state of enlightenment.[142] Blumenbach's uniqueness on this important point shows the formative influence of traditional Christian thought on his understanding of human beginnings and racial variation.

Blumenbach is noticeably silent on the question of how humans came to be, but vocal regarding our distinction from the animal world. Blumenbach saw that this distinction lay in the fact that "mankind was a naturally domesticated species," and that "nature has limited him no wise, but has created him for every climate, and every sort of

[138] Luther, "Genesis 1:26" in, *Luther's Works*, pp. 63.
[139] Ibid., pp. 65.
[140] Blumenbach, *Contributions to the Study of Natural History*, pp. 294.
[141] Ibid., pp. 294.
[142] Greene, *The Death of Adam*, pp. 221-235.

aliment and has set before him the whole world as his own and given him both organic kingdoms for his aliment."[143] There is an analogous sentiment in Luther's biblical commentaries on the creation story. For Luther, mankind's distinction from the animal world lay in the fact that Adam was endowed with the "image of God." According to Luther this image was:

> [a]ssigned to the most beautiful creature, who knows God and is the image of God, in whom the similitude of the divine nature shines forth through his enlightened reason, through his justice and wisdom. Adam and Eve become the rulers of the earth, the sea, and the air. But this dominion is given to them not only by way of advice but also by express command. Here we should first carefully ponder the exclusiveness in this: no beast is told to exercise dominion.[144]

Thus we can see that like Luther, Blumenbach was of the mind that complete knowledge of the original state of mankind was unknown. Both also believed that the first human possessed attributes that fundamentally distinguished them from the animal world. For Luther it was "God's image" in mankind. For Blumenbach it was humanity's natural domestication and the beautiful symmetry of its skull.

It is not difficult to understand the influence of Christian ideas over Blumenbach's theory of human descent when you consider that until the nineteenth century the Christian biblical narrative was not simply a religious way of looking at the history of the world, it *was* the history of the world—at least within broad-brush strokes.[145] During the seventeenth century the Anglican archbishop James Ussher claimed that earth was created on 23rd day of October 4004 B.C.—a date that would remain fixed within the minds of naturalists centuries later. As the historian of science Martin J. S. Rudwick has shown, biblical history *as* world history meant "other secular events, above all the life of

[143] Blumenbach, *Contributions to the Study of Natural History,* pp. 294.
[144] Luther, "Genesis 1:26" in, *Luther's Works*, pp. 66.
[145] Rudwick, "The Shape and Meaning of Earth History", pp. 301.

society and its constituent persons, received meaning by being seen in their appropriate place within the [Biblical] narrative structure."[146] Knowledge derived from non-biblical sources was cast into the general conceptual framework established by Scripture. Although the advent of eighteenth-century biblical criticism in Germany and the establishment of the antiquity of the earth with the birth of modern geology during the early nineteenth century fundamentally reversed the relationship between the Bible and secular knowledge—and effectively decoupled human history from history of the world—natural historians until the time of Darwin continued to fit secular knowledge about human descent and variation into a biblically delimited time frame.[147] The human species was thought to be only about five thousand years old at the time of Blumenbach's racial taxonomy. Nowhere in the *Natural Varieties of Mankind* does Blumenbach consider the length of time needed for white Caucasians to degenerate into other human types. As the historian John C. Greene explained:

> In his time scale, too, Blumenbach remained a traditionalist. Although he recognized that the evidence afforded by mummies seemed to indicate that the Egyptian people had changed very little in physical make-up in the course of several thousand years, he seems never to have wondered how much time had been required to produce the diversity of type exhibited by the various races of the human species.[148]

We might say that eighteenth-century secular knowledge about human variation was inevitably packaged to conform to the "facts" of Christian ideas about the antiquity of humankind and the interrelatedness of species.

By drawing attention to how the theological premises that surrounded Blumenbach's thinking about human descent and race it is clear that the Christian

[146] Ibid., pp. 300.
[147] Ibid., pp. 310.
[148] Greene, *The Death of Adam*, pp. 228.

heritage of natural history played a much more significant role than is often realized by contemporary discussions of racial taxonomies during this period. Thus it is a misnomer to say the racial typologies of the eighteenth century are wholly Platonic—they were also profoundly Christian.

Binding the Secular and the Religious with Race

The typologies of the eighteenth century, which turned human differences into objects of study, sowed the seeds for what would become nineteenth-century polygenic accounts of human origins that explicitly attempted to renounce the supernaturalism of the Christian creationist narrative and with it the belief in common human descent. As we will see in the following chapter, nineteenth-century polygenists grasped one of the shortcomings of the Christian creationist narrative that eighteenth-century naturalists took for granted: namely, that common descent from a shared ancestor (Adam) could not be accounted for empirically under the Christian timeline for human life. Human diversification appeared too extensive for the descendants of Noah to have differentiated into the various human types alive during the nineteenth century—and to do so in less than six thousand years. In the next chapter we will see how in the US during the mid-nineteenth century secular humanism pushed against the theocentric notions and Christian narratives that continued to inform how naturalists studied human diversity.

For now, it is clear that the roots of contemporary scientific divisions of the human species, of which Blumenbach is accredited with their initial articulation, are found in the eighteenth century. However, as with all roots, they are covered in the soil that nurtured them. Blumenbach's racial typologies, although based on empirical

observation and accounted for by his theory of formative force [*Bildungstrieb*], were framed by the Christian ideas of common human descent, human distinction from the animal world, and the recent antiquity of human creation.

The retention of these ideas should force us to rethink the claim that Blumenbach—as an enlightenment figure—separated science from theology and positioned anthropology on purely secular grounds. [149] Although Blumenbach adhered to the norms of naturalistic observation for his theory of racial formation, his ideas continued to be bookended by Christian assumptions. This is a form-content issue. Surely the content of his theory was secular in the sense of being an expression of naturalistic philosophy and reliant upon empirical observation. However, the form of his argument, that is the general parameters of his thinking about the origin and ends of human life, remained delimited by Christian thought. Blumenbach was ultimately a monogenist and affirmed a conception of human descent that was consistent with the Christian creationist narrative. Unlike Darwin nearly a century later, Blumenbach was not of the mind that humans evolved out of the animal world, or that an "Ape-man" preceded the human form.

As I have tried to argue in this chapter, despite his gesture toward potentially non-Christian accounts of human variation and species relatedness, Blumenbach remained a traditionalist in his views about the uniqueness of human traits, the single unity of the races, and the recent creation of mankind. In other words, there is no evidence of a complete break in Blumenbach's thinking from the Christian ontologies affirmed by seventeenth-century naturalists under the influence of the theocentric system of the Newtonian worldview.

[149] Horsman, *Race and Manifest Destiny*, pp. 46.

The typological thinking epitomized in the thought of Blumenbach, particularly with its omission of an explicit reference to Christian ideas, would carry over into the nineteenth-century and aid naturalists in their attempt to rank and classify the various racial groups. As we will see in the third chapter, the racial typologies forged during the eighteenth century were indispensable for the classification of human types by nineteenth century naturalists. Yet with the growing influence of evolutionary theory during the nineteenth century, naturalists were able to maintain an intellectually productive paradox. With the discovery of the Neanderthal, naturalists affirmed the malleability of the human form by arguing that contemporary populations where capable of evolving from primitive human types. Yet, following Blumenbach, evolutionists classified each population by arguing that there were permanent and immutable racial traits that persisted across generations.

Chapter 2

The Place of Religion within Josiah C. Nott's
Polygenic Theory of Human Origins

Introduction

In the winter of 1844, the American naturalist and renowned surgeon Dr. Josiah Clark Nott (1804-1873) was asked to participate in a public lecture series aimed at increasing scientific literacy in Mobile, Alabama. Nott agreed to the invitation and delivered what would be published as the *Two Lectures on the Natural History of the Caucasian and Negro Races*. This lecture and subsequent publication launched Nott as one of America's leading voices against the Christian claim that all races descended from a common ancestor. The sum of both lectures amounted to Nott's infamous declaration that the Biblical account of common human descent (monogenesis) contradicted empirical science.

Until the middle of the nineteenth-century, most natural historians assumed the human race had only been around for 6000 years.[1] The seventeenth-century Anglican archbishop James Ussher, who claimed that the earth was created on the 23rd day of October 4004 B.C, had set this timeline. In the decade before Nott's lecture, the paleontologist George Robins Gliddon discovered Egyptian paintings depicting each of the major races with the same traits and characteristics seen in the mid nineteenth-century. While continuing to maintain the recent antiquity of man, Nott claimed that these Egyptian depictions either meant that each of the various races had acquired their unique traits in the few centuries between the creation of Adam and the life of Moses, or

[1] John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought*, (Ames: Iowa State Press, 1977[1959]).

that these paintings were proof that each of the races had been created, from the very beginning, with permanent and distinct traits, thereby ruling out the possibility that all humans were descendants from a shared ancestor.

Nott contended that the theory of human unity could only be true if modern science conceded one of two explanations: the environment or "physical causes" were capable of rendering different human forms in less than 6000 years, or the various racial groups were created through a "direct act of providence."[2] But according to Nott neither explanation could be true, since both contradicted "the great chain of Nature's laws," where species had been created with fixed characteristics properly suited for their natural habitat.[3] Moreover, the effects of the environment on an organism were thought to be gradual, and there was no consensus among naturalists on how such changes were passed down to the succeeding generation.[4] At the same time, the idea that the Creator could transgress natural law was unpalatable to nineteenth-century anatomists and physicians with a refined appreciation for scientific methodology.

For Nott, this left only one reasonable explanation for why there were different races: "that there is a Genus, Man, comprising two or more species" and that each racial group possessed its own unique ancestor.[5] With this polygenic theory of human origins, Nott wanted to put to rest, once and for all, the theory of monogenesis by arguing that

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[2] Josiah C. Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races* (Mobile, Alabama: Dade and Thompson, 1844), pp. 1. All of the remaining quotations in this paragraph come from this title.
[3] Ibid., pp. 1.
[4] See Peter Bowler's discussion of environmental Lamarckism in, *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900* (Baltimore: Johns Hopkins Press, 1983), pp. 118-140 and also, *Evolution: The History of an Idea* (Berkeley: UC Press, 1989), pp. 208-214; David Hull also has an important discussion on the lack of consensus around heredity in, *The Metaphysics of Evolution* (New York: State University Press, 1989), pp. 27-42.
[5] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*, pp. 1.

under no conditions should we assume that the physical effects of the environment upon the human form could "change a White man into a Negro."[6]

American polygenist thought was a provocative scientific movement whose controversial claims about the multiple origins of human life caused a firestorm among naturalists and the lay public beginning in the 1830s. For its time, polygenism was a true science and entailed a creative mix of scrupulous data collection about human population traits across the world and theories about the deleterious consequences of racial mixing. As a system of thought, polygenism sought to find an answer to how and when the so-called "races" developed what appeared to be clearly defined and fixed traits. The steadfast opposition of polygenists to the Biblical chronology of human descent and their emphasis on the geographic isolation of the races helped ripen the public's mind for the arrival of Darwinism in the United States.[7] Darwin was the first to offer a new defense of monogenism by extending the timeline of human existence beyond the Biblical tradition while also showing that the successful reproduction of previously isolated populations was proof that they shared a common ancestor in the past.[8] It would take Americans many generations to fully embrace Darwinian evolution, which partially explains why many of the questions and ideas raised by American polygenists continued to be asked by early twentieth-century medical practitioners and scientists interested in the seemingly fixed biological and behavioral differences between various racial groups.[9] We will see in the following chapter that social Darwinism, the American eugenics movement, and

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[6] Ibid., pp. 1.
[7] William Stanton, *The Leopard's Spots: Scientific Attitudes Toward Race in America 1815-1859* (Chicago: Chicago University Press, 1960), pp. 196.
[8] Greene, *The Death of Adam*.
[9] George Stocking, "The Persistence of Polygenesis Thought in Post-Darwinian Anthropology" in, *Race, Culture, and Evolution: Essays in the History of Anthropology Victorian Anthropologists* (New York: Free Press, 1968), pp. 42-68.

twentieth-century American anthropology are indebted to the conceptual breakthroughs yielded by the nineteenth-century debate between monogenists and polygenists over the shared ancestry of the human race.

In light of the importance of polygenism within the history of the modern scientific study of race, this chapter gives specific attention to the largely overlooked religious ideas marshaled by American polygenists in their effort to construct race as a unit of analysis. My aim is to complicate our understanding of the mutually productive relationship between science and religion with regard to theories of race. This chapter focuses specifically on the thought of Dr. Josiah Clark Nott, one of the most popular polygenists in the nineteenth century. Nott was also one of the leading voices of the American School of Ethnology after the death of Samuel Morton in 1851.[10] Historians have claimed that Nott was one of the first American naturalists to publicly denounce the notion of common human descent proclaimed in the Mosaic record in his effort to establish a secular view of race.[11] I argue, however, that although Nott may have aspired to "to cut loose the natural history of mankind from the Bible, and to place each upon its own foundation, where it may remain without collision or molestation," his thinking very much remained within the tradition of Christian ideas about mankind's place in nature.[12]

Garnering insights from Fleck's theory rudimentary concepts, I propose that Christian notions about the recent creation of man, the order of nature, and the purposiveness of the human form, function as framing ideas within the thought of Josiah Nott, and explain how he could have maintained religious ideas within his theory of

[10] Stanton, *The Leopard's Spots*, pp. 69-70; Frederickson, *The Black Image in the White Mind*, pp. 78.
[11] Stanton, *The Leopard's Spots*, pp. 69.
[12] Josiah C. Nott, *Two Lectures on the Connection Between the Biblical and Physical History of Man* (New York: Bartlett and Welford, 1849), pp. 7.

polygenesis even though he intended to "stir up hell in the Christians" by overthrowing the notion of common descent.[13] Nott's theory of human origins does not represent the triumph of science over religion, or simply the work of a confused amateur naturalist. Rather, Nott's critique of monogenesis offers an opportunity to show how science and religion could work together in the development of novel and controversial ideas about race and human origins. In other words, Nott's "secular" theory of polygenesis was in fact profoundly Christian.

Nott and the nineteenth-century Politics of the "American School" of Anthropology

The so-called American School of Ethnology came into maturity during the period of social, political and economic unrest that led to the American Civil War.[14] In 1820, a hard-fought battle between pro-slavery and anti-slavery factions of Congress resulted in The Missouri Compromise, which balanced power in the Senate between both sides of the slavery debate. The compromise aroused fears in the South that a strong federal government posed a threat to the institution of slavery and provided the motivation for the secessionist agenda of the Confederacy.

Ten years later, the presidency of Andrew Jackson introduced changes to America's race relations that would endure well into the following century. On May 26, 1830, Jackson signed into law the Indian Removal Act, which divested an estimated 100,000 Native Americans of their property throughout the South, particularly in the state of Georgia. Also under Jackson's watch, Congress implemented a gag rule between 1836-1844, which banned petitions opposing slavery from being introduced before the

[13] William Stanton, *The Leopard's Spots,* pp. 122.
[14] Lee D. Baker, *From Savage to Negro: Anthropology and the Construction of Race, 1896-1954*, (Berkeley: University of California Press, 1998), pp. 14.

U.S. House of Representatives. This was a considerable blow to the efforts of abolitionists to persuade Congress to do away with America's "peculiar institution." Finally, Jackson was responsible for appointing Roger B. Taney as Chief Justice of the U.S. Supreme Court. In 1857, Taney authored the majority opinion of the famous *Dred Scott v. Sandford* case, claiming that "Negroes" were "beings of an inferior order, and altogether unfit to associate with the white race … and so far inferior that they had no rights which the white man was bound to respect."[15] In the wake of this decision, African-Americans were swiftly denied the rights of full citizenship across the United States.

In this setting, the American School of Ethnology emerged as a leading voice of novel scientific theories about the multiple origins of mankind and the nature of racial differences. Charles Caldwell, Samuel George Morton, Samuel A. Cartwright, George Gliddon, Josiah C. Nott, and Louis Agassiz comprised the ranks of the American School. This group of physicans, craniologists, public health specialists, Egyptologists, ethnologists, and geologists took up a rigorous study of the various human populations across the globe and worked collaboratively to develop the idea that racial variation stemmed from immutable physical differences passed down from one generation to the next.[16] During the era of Jacksonian politics, polygenism provided proslavery advocates with scientific grounds for denying citizenship to minorities, restricting their social and economic mobility, and perhaps most significantly their sexual relationships with whites. It has been well documented by historians such William Stanton and George

[15] Audrey Smedley, *Race in North America: Origins and Evolution of a Worldview* (Virginia: Westview Press, 1999), pp. 242-245.
[16] Stanton, *The Leopard's Spots*.

Frederickson, that the line between politics and the racial science of American polygenism were constantly blurred.

Much of American polygenist thought was indebted to the work of the Philadelphia-born ethnologist and physician Samuel Morton. Samuel Morton's *Crania Americana* (1839) and *Crania Aegyptiaca* (1844) were seminal texts for the American School's theory of polygenesis, and contributed to the debate among naturalists on both sides of the Atlantic over the longstanding belief in human unity.[17] In both works, Morton measured the skulls of each of the five majors races (Caucasian, Mongolian, Malay, American, and Ethiopian) as delineated by Blumenbach in the eighteenth-century. Noting that the skulls of each race contained distinct traits, Morton inferred that the intellectual and moral capacity of each group was also dissimilar. He then added that climate and environment had little effect on the crania of each population. This suggested to Morton that racial traits were fixed and that it was highly unlikely that each group was descended from a common ancestor. In *Crania Aegypticia*, Morton claimed that the archeological and cranial evidence demonstrated that Egyptians were not "black" and that Africans had been relegated to the status of slaves at the very beginning of civilization—as though by some natural law.[18]

Despite these observations, Morton never openly denounced the theory of common human descent. Instead, he was a reluctant polygenist who acknowledged that more work had to be done to corroborate his discoveries.[19] Although a man of science,

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[17] See James Prichard, *Researches into the Physical History of Man* (London: 1813); John Bachman, *The Doctrine of the Unity of the Human Race Examined on the Principles of Science* (Charleston, S.C.: 1850); Charles Hamilton Smith, *The Natural History of the Human Species: Its Typical Forms, Primeval Distribution, Filiations, and Migrations* (Boston: 1851).
[18] Stanton, *The Leopard's Spots*.
[19] Ibid.

Morton remained a devout Christian, having been raised a Quaker and then becoming an Episcopalian as an adult. Morton's religious beliefs left him unwilling to draw out the full implications of his ethnology.[20] This he left to younger members of the American School, who were willing to push his discoveries to their logical conclusion, even if this meant an outright attack on Biblical truth.[21]

No one was more successful at this than the Southern physician and ethnologist Josiah C. Nott.[22] Born in South Carolina, Nott received his medical degree from the University of Pennsylvania in 1827. After his post-graduate training in France, Nott began surgical practice in Mobile, Alabama in 1836.[23] He quickly established a reputation as one of the most skillful surgeons in the south, where he also specialized in gynecology.[24] While in Mobile, Nott, along with Dr. George A. Ketchum, established a private infirmary for African Americans, which began operations in 1848 and continued to treat patients until after the Civil War.[25] Nott is also given credit for discovering that yellow fever was transmitted through mosquitoes in a report that appeared in the January 1848 issue of *The Charleston Medical Journal and Review*.[26]

Nott was a staunch defender of the freedom of scientific inquiry, claiming that the idea of mankind's common origins was an unscientific belief and a mere carryover from natural history's indebtedness to Christianity.[27] Nott is particularly interesting because his polygenic ideas about race illustrate the limits of viewing science and religion solely in terms of conflict. In many respects Nott's attitude toward religion was antagonistic. In

[20] Ibid.
[21] Ibid.
[22] Ibid., pp. 69.
[23] Ibid., pp. 66.
[24] Emmett B. Carmichael, "Josiah Clark Nott", *Bulletin of the History of Medicine*, 22 (1948), pp. 250.
[25] Ibid., pp. 250.
[26] Ibid., pp. 251.
[27] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*.

fact Nott intended for his theory of race to set the science of human origins and the Bible on separate footing.[28]

But despite these intentions, religious concepts nonetheless made their way into Nott's vision of race and human ancestry. This is all the more interesting because, unlike other polygenists such as Morton, who was Episcopalian, or the well-known Louis Agassiz, who was Unitarian, Nott did not practice Christianity during his adult years.[29] He was a free-thinker on religious matters and a materialist when it came to medicine and science.[30] Although raised as a Presbyterian, Nott lost the faith while earning his bachelors at South Carolina College, which in the 1820s was a haven for religious unorthodoxy and radical freethinkers.[31] Later, at the University of Pennsylvania Nott became an adherent to the theories of Francois Broussais and the French school of physiological medicine, which rejected previous metaphysical speculations about the workings of human body, stressing instead the importance of observation and analysis.[32] Nott therefore had no reservations about using science to contest Christian beliefs. Holding firm to this principle Nott was certain that polygenism would stir up controversy among Christians.[33]

Historical Interpretations of Nott's Significance

Historians have mostly focused on Nott's *Types of Mankind* (1854), written jointly with George R. Gliddon. The attention this work has received is due to its

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[28] Ibid., pp. 7
[29] Reginald Horsman, *Josiah Nott of Mobile: Southerner, Physician, and Racial Theorist* (Baton Rouge: LSU Press, 1987).
[30] Ibid.
[31] Ibid.
[32] Ibid.
[33] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*.

success—its first printing completely sold out and nine editions were published before the end of the nineteenth-century—and it's timing during the period leading up to the Civil War.[34] The publication of *Types of Mankind* coincided with efforts to expand slavery within the former Louisiana territories with the Kansas-Nebraska Act of 1854. Nott and Gliddon argued that polygenesis was consistent with natural law, that non-European races were biologically inferior, that the Bible was an insufficient source for defending the theory of human unity, and that ultimately the mixing of white blood with any other population was sure to bring an end to the European race. Historians have been quick to point out that the argument of *Types of Mankind* was highly amenable to the agenda of proslavery apologists and provided a scientific basis for slavery.

Largely because of this, some historians have written off the theories of the American School as a legitmate contribution to the history of scientific discussions of race. Historians have instead used the theories of race articulated by the American School to reinforce the boundaries between "real" science and pseudoscience. For example, George Fredrickson, whose reading of the American School is considered important among historians critical of racializing science, argues that political temperament and racial bias compromised the objectivity and truth claims of Nott and others.[35] With an impressive command of personal correspondence between Nott and proslavery contemporaries like the South Carolina political leader James Henry Hammond, Frederickson argues that Nott's politics over-determined his views of race and therefore the conceptual shifts involved in the development of Nott's scientific account of racial

[34] Stanton, *The Leopard's Spots*, pp. 163.
[35] George M. Frederickson, *The Black Image in the White Mind: The Debate on Afro-American Character and Destiny, 1817-1914* (Middletown, Connecticut: Wesleyan University Press, 1987[1971]); also see Steven Jay Gould's treatment of the American School in, *The Mismeasure of Man* (New York: W.W. Norton & Company, 1996[1981]), pp. 100-104.

variation were irrelevant. To put Frederickson's reading simply: Nott's science appears to be little more than window-dressing for his racist politics.[36] As Frederickson explained:

> The most fervent of the scientific apologists for the American system of racial subordination was Dr. Josiah C. Nott, who became the leading exponent of the new ethnology after the death of Morton. Preconceived racial attitudes probably drew him to ethnology in the first place and influenced his inquiries.[37]

Frederickson rightly argues that Nott's views of race were an extension of a white-racialist view of history "then coming into fashion all over the Western world as a justification not only for slavery but also for imperial expansion."[38] Thus, Nott's writings "would seem to belong at least as much to the history of proslavery and racist propaganda as to the history of science."[39]

I share the liberal-democratic sensibilities that animate Frederickson's claim that the scientific discussions of race produced by the American School were part of a larger discursive strategy to support American and European imperialism abroad and the disenfranchisement of blacks locally. Yet, I think that Frederickson and other historians of this period overlook the subtle conceptual moves at play in the thinking of polygenists due to their own liberal-democratic critiques of the ideological use of science to justify non-democratic ends. The taint of nineteenth-century southern conservative politics within scientific thinking should not prevent us from delving deeper into the conceptual conditions that made such knowledge claims possible to begin with. To reduce the theory of polygenesis propounded by the American School simply to a political perspective can lead us to overlook other concepts that make-up this theory.

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[36] Frederickson, *The Black Image in the White Mind*, pp.78-82.
[37] Ibid., pp. 78.
[38] Ibid., pp. 79.
[39] Ibid., pp. 79.

The Story of Noah's Descendants Prevails

Nott's "Two Lectures on the Natural History of the Caucasian and Negro Races," (1844) prefigure the conceptual moves articulated later in the more popular text *Types of Mankind* and therefore offer a glimpse into his thought while in its early formation.[40] Moreover, Nott's reputation as an ethnologist was born from the controversy created by these lectures, making them as important to the American polygenist tradition as Morton's *Crania Americana* and *Crania Aegyptiaca*.[41]

In his first public lecture on race, Nott took the opportunity to share his thoughts on how recent discoveries in ethnology were incompatible with the Biblical account of common human descent. Nott's argument revolved around two key issues: firstly, the length of time needed for humans to develop into different races. Secondly, the problem of what appeared to be the fixed nature of racial traits. Together these two issues became the grounds for Nott's refutation of the theory of common human descent. We will see, however, that Nott's account of multiple human origins (polygenism) continued to affirm elements of the Christian creation narrative described in the book of Genesis as well as the idea of recent human creation. Nott also held a conception of Nature that was affirmed by Christian naturalists during the seventeenth and eighteenth century.

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[40] William Stanton argues that most of the ideas contained in the widely popular *Types of Mankind* had been published upon or made public by the American School before1854. See Stanton, *The Leopard's Spots*, pp. 163. For this same reason I have decided not to discuss Nott's *Two Lectures on the Connection between the Biblical and Physical History of Man* delivered in New Orleans in front of the Louisiana legislator in December of 1849. The ideas contained in this lecture are largely captured in the two lecturers discussed in this essay. However, to read about the political ramifications of Nott's lecture in New Orleans see Melissa Nobles's, *Shades of Citizenship: Race and the Census in Modern Politics*, (Stanford: Stanford University Press, 2000), pp. 39-43.

[41] William Stanton argues that most of the ideas contained in the widely popular *Types of Mankind* had been published upon or made public by the American School before1854. See Stanton, *The Leopard's Spots*, pp. 163.

According to the Bible all humans were the descendants of Adam. But following the great flood, Adam's only living descendants were Noah, his three sons Shem, Ham, and Japheth, and each of their wives. In the tenth chapter of the Genesis narrative, Noah's three sons repopulated the earth after the flood, yielding the various races that apparently exited during the nineteenth-century. According to the Biblical chronologist James Ussher, the flood was thought to take place in the year 2348 BC.[42] This was roughly 1500 years after the creation of Adam. These dates were printed in the margins of the Authorized Version of the Bible (known as the King James translation) and carried the weight of authority among Christians in Europe and America well into the nineteenth-century.[43]

Nott knew this Biblical chronology very well and deciphered what had otherwise been overlooked for centuries by Christian naturalists: namely, that according to the chronology provided by Ussher there was very little time between the flood of 2348 BC and the birth of Moses which, during Nott's time, was believed to occur sometime after the reign of King Menes in 2272 BC.[44] In other words, less than 100 years separated Moses from the sons of Noah. Adding to Nott's suspicions was George Robin Gliddon's discovery of Egyptian paintings that depicted Africans, Asians, and Europeans with the very same traits they possessed in the nineteenth-century.[45] Gliddon was an American archeologist working in Cairo in the 1830s. In light of Gliddon's discovery, Nott reasoned that if the Biblical account of common human descent were true, then humans

[42] Greene, *The Death of Adam*.
[43] Janet Browne, "Noah's Flood, the Ark, and the Shaping of Early Modern Natural History" in, *When Science and Christianity Meet* ed., D. Lindberg and R. Numbers (Chicago: University of Chicago Press, 2004), pp. 114.
[44] Stanton, *The Leopard's Spots*.
[45] Stanton, *The Leopard's Spots*.

must have developed their racial differences during the very limited period of time when Shem, Ham and Japheth repopulated the earth between 2348 and 2272 BC; which again was a period of less than 100 years.[46] The problem for Nott was how to account for the development of different racial types within the parameters of the Biblical timeline while not appealing to supernatural explanations.

Nott's solution to this problem was to reject the idea of common human origins by showing how Noah's descendants were Caucasian. Being descendants of Noah, Nott believed that the Egyptians could not have been black, as was commonly assumed in the antebellum south given wide prevalence of the "curse of Ham" narrative among the educated and lay public.[47] But the very fact that Nott used the Biblical story to frame his understanding of human descent warrants reflection on the cultural and social context in which he developed his scientific theory.

As the historian Sylvester Johnson has suggested, Americans in the nineteenth-century inherited from their Christian European forefathers several strategies for explaining the origin of the different races.[48] There were two components to this inheritance. On the one hand, there was an oral and written tradition of Biblical scholarship that allowed academics and theologians to take elements from the Bible, such as the curse of Ham, or the dispersion of Noah's progeny across the globe following the Tower of Babel saga, to identify the racial identity of Noah's three sons. On the other hand, there was the tradition of European natural philosophy which, following the Enlightenment, proposed accounts of the origin of racial differences that were secular in

[46] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*.
[47] Sylvester Johnson, *The Myth of Ham in Nineteenth Century American Christianity: Race, Heathens, and the People of God* (New York: Palgrave Macmillan, 2004).
[48] Ibid.

their content, insofar as they did not explicitly refer to the Bible, but nonetheless mirrored Christian creation accounts by maintaining the supernatural origins and the recent antiquity of human life.[49] These two traditions were not entirely separate but shared a symbiotic relationship.

The belief that the Bible provided insight into the origin of the different races was part of a long-standing practice of using Scripture to reconstruct the ancestries of present day populations. This practice took on a unique and enduring shape following modern appropriations of medieval accounts of the story of Noah's sons.

In the seventh century, the Spanish encylopedist and historian of the early Middle Ages, Isidore of Seville, created tripartite diagrams known as "T-O" maps that translated the story of the earth's repopulation by Noah's descendants into a visual racial taxonomy of the three major races.[50] These maps gained their namesake because their simple structure entailed a "T," representing the major waterways of the earth, superimposed over an "O," which represented the globe. The three known continents, Asia, Africa, and Europe were divided across the three different planes of a globe created by the superimposed "T." Asia was positioned at the top of the globe, leaving Europe and Africa on the bottom left and right corners respectively. These maps were East facing, in order to convey the idea that mankind had descended from Eden thought to lie just past Asia at the top of the earth. Overlaying the three geographical planes were the names of Noah's three sons: "Sem" for Asia, "Ham" for Africa, and "Japheth" for Europe. The waterways over the globe created a "T," which mirrored the Cross. The function of these "T-O"

[49] Greene, *The Death of Adam*.
[50] David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*, 2nd Ed., (Chicago: University of Chicago Press, 2007), pp. 279-280; David N. Livingstone, *Adam's Ancestors: Race, Religion, and the Politics of Human Origins* (Baltimore: Johns Hopkins University Press, 2008), pp. 5.

maps was to organize physical space according to a Christian conception of the world as a temporal phenomenon inhabited by specific populations with a clear ancestry dating back to Noah.[51]

As the historian Benjamin Braude has shown, the story of Noah's three sons represented by the "T-O" maps did not carry the same racial valences during the time of Seville as they did later during the early modern period.[52] Prior to the explorations of the fifthteenth-century, Europeans knew very little about Africa and nothing about the Americas. In effect, race in medieval Europe lacked a global frame of reference and was therefore not loaded with modern notions about pure homogeneous groups occupying isolated geographic regions.[53] Although medieval thinkers contemplated the origin of racial differences, they did not believe that Arab Muslims, Asians to the East, and North and East Africans inhabited separate continents.[54] Moreover, given both the scarcity and inconsistency of the Bible before the Protestant reformation, medieval naturalists held wide-ranging views about the identity and geographic location of Noah's three sons. The T-O maps, therefore, were not maps in the modern sense, but iconic images loosely attaching Noah's three sons to three different landmasses.

With very little knowledge of the world outside of the shores of the Mediterranean Ocean and no wide-reaching consensus on the meaning of the story of Noah's descendants, the distillation of all human variation into three continental types would have been incomprehensible to medieval Christian naturalists.

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[51] Evelyn Edson, *Mapping Time and Space: How Medieval Map Makers Viewed Their World* (London: The British Library, 1997), pp. 15.
[52] Benjamin Braude, "The Sons of Noah and the Construction of Ethnic and Geographical Identities in the Medieval and Early Modern Periods" *The William and Mary Quarterly*, Third Series, January 1997, Vol. 54, No. 1, pp. 103-142.
[53] Ibid.
[54] Ibid.

Braude argues that the idea of three original continental races was therefore a uniquely modern invention. It was only after the world became larger and better defined in the centuries that followed European colonization in the sixteenth-century, did the notion of separate and distinct continental races begin to emerge.[55] Over the course of the next three centuries, which witnessed the mass distribution of the Bible among the literate, the story of Noah's descendants helped Western Europeans discern what was believed to be the original ancestry of the races found in the Americas, Sub-Saharan Africa, and South Asia. Gradually the racial identities of Shem, Ham and Japheth settled into the designations of Asia, Africa and Europe respectively.

Thus the birth of Noah's three sons, as we know it, happened at the dawn of the European encounter with the colonial "Other", pulling them into the fold of the European religious imagination and under the gaze of the scientific enterprise. As Charles Long has noted, the encounter with the racial "Other" by European Christians was as much a process of signification as it was a geopolitical reality.[56] The origin of modern racial thinking is not found solely in Plato's theory human essences, as is commonly assumed. Rather it was Christianity that provided a basic framework for modern racial classifications.

Like his Christian forbearers, Nott believed that Noah's three sons populated the earth following the flood. Yet to decipher the racial identity of Shem, Ham and Japheth, Nott also drew upon natural philosophy. Like most Antebellum naturalists, Nott held hand-in-hand concepts from Christianity with the speculative tradition of natural philosophy. Indeed, Nott's vision of the first humans was influenced by the racial theory

[55] Ibid., pp, 127.
[56] Charles Long, *Significations: Signs, Symbols, and Images in the Interpretation of Religion* (Aurora: The Davies Group Publishers, 1985).

of Johann Friedrich Blumenbach. As we saw in the previous chapter Blumenbach provided an account of how whites were the original human type. He reasoned in his seminal work *On the Natural Varieties of Mankind* (1781) that:

> It is the white in colour, which we may fairly assume to have been the primitive colour of mankind, since, […] it is very easy for that to degenerate into brown, but very much more difficult for dark to become white, when […] this carbonaceous pigment has […] deeply struck root.

In other words white skin was far more malleable than black and thus appeared to be the most reasonable candidate for the color of the first humans. As the historian Michael O'Brien has observed, American naturalists, particularly in the South, gravitated to the racial typologies of Blumenbach, because unlike the theories of the French naturalist Jean-Baptist Lamark—who's notion of acquired racial traits was popular among nineteenth-century European intellectuals—Blumenbach's account of race was void of evolutionary undertones.[57] According to Blumenbach's typology, races did not develop successively from inferior primitive to complicated modern as was suggested by Lamark or the British naturalist James C. Pritchard. Instead, Blumenbach argued that the races began with God's creation of an original Caucasian type from which all other humans descended. This position was consistent with American's profound religious sensibility.[58] It was not much of a conceptual leap for American thinkers to make connections between the Christian narrative of human origins and Blumenbach's theory of human descent from an original form.

This was clear in Nott's own thinking as he wrote that, "in the allotment of territories to the offspring of Noah, Egypt was given as an inheritance to Mizraim, the

[57] Michael O'Brien, *Intellectual Life in the American South, 1810-1860* (Chapel Hill: University of North Carolina Press, 2010), pp. 56.
[58] Ibid., 56-62.

son of Ham […] Mizraim, being a descendant of Noah, was of course a Caucasian."[59] Nott believed that if Ham's descendants, who were white, had repopulated Egypt, it was unreasonable to assume that the blacks found in Sub-Saharan Africa could have also been the offspring of Ham, coming into being in the 100 years that followed Noah's flood. Nott pleaded that "if there is any miracle in the Bible more wonderful than this, I should like to know what it is." [60]

In light of this inconsistency, Nott maintained that the story of Noah and his three sons accounted for the descent and spread of only whites across the globe. Nott claimed that other populations could have developed separately from Adam's bloodline. In a half-hearted attempt to consol his Christian contemporaries Nott asked whether:

> God anywhere said that he never intended to create another man, or that other races were not created in distant parts of the globe. I would ask […] is there any thing so revolting in the idea that a Negro, Indian, or Malay, may have been created since the flood of Noah, or (if the flood was not universal) before this epoch?[61]

Given Nott's intentions to part ways with the Biblical account of monogenesis, we might ask: why not also abandon the Biblical timeline for human life on earth? By 1840, most naturalists were well aware of Charles Lyell's argument in *Principles of Geology* (1830-33) for an extended age of pre-human history, which effectively freed geology from the Biblical tradition.[62] It would seem then that extending the timeline of human history backward would dovetail with Nott's commitment to advance beyond the limits imposed by the Mosaic record. The trouble was that Nott could not abandon the Biblical

[59] Nott, *Two Lectures on the Natural History of the Caucasian and the Negro*, pp. 12.
[60] Ibid., pp. 14.
[61] Ibid., pp. 7.
[62] Mott T. Greene, "Genesis and Geology Revisited: The Order of Nature and the Nature of Order in Nineteenth-Century Britain" in, *When Science and Christianity Meet*, ed., David C. Lindberg and Ronald L. Numbers (Chicago: University of Chicago Press, 2003), pp. 154.

chronology of recent human creation without also giving up his argument for immutable racial traits. Here Nott was coming against the conceptual boundaries of the Christian style of reasoning that had guided naturalists for centuries in their study of race. An older human chronology better served the argument for monogenesis because it theoretically allowed more time for human populations to develop their so-called racial differences after having descending from a common ancestor. An extended human chronology also would have weakened the argument for fixed racial traits by suggesting that humans, like animals and plants, were subject to the same laws of physical change when pressured by the environment over extended periods. But most mid-nineteenth-century Christian naturalists were unwilling to wage a defense of monogenesis at the expense of the belief in recent human antiquity.[63] Albeit for different reasons, Nott also had a stake in maintaining the recent creation of mankind as recounted in the story of Noah's descendants. Nott's motivations for retaining the traditional chronology had nothing to do with piety but rather stemmed, almost unconsciously, from having his views of race shaped by the longstanding practice of using the story of Noah's descendents to recreate the history of mankind's diversification.

Interestingly, Nott held no commitments to any Christian denomination during his adult life and among his contemporaries it was said that, "his ideas on religion were confused and he was never disposed to argue about it."[64] Nott did in fact hold a peculiar view of religion, one that swayed from a quasi interest in the "modernization" of religious truth, to an outright disdain for the way Christianity compromised the pursuit of science. Elsewhere in his writings Nott argued that the Bible was actually ambiguous

[63] For a detailed discussion of the problem an extended timeline posed to monogenists see Greene, *The Death of Adam,* pp. 309-339.
[64] Emmett B. Carmichael, "Josiah Clark Nott", *Bulletin of the History of Medicine*, Vol. 22, 1948, pp. 255.

regarding the single origins of mankind. Nott claimed, "the unity of the races can only be deduced from forced constructions of the Old and New Testaments, and a persistence in this error is calculated to subvert and not to uphold our religion."[65] On the surface these statements suggest Nott was interested in bringing greater harmony between Biblical truths with the facts of modern science. But on a closer look, Nott had little concern for what his theory of polygenesis might mean for American Christians whose belief in the redemptive significance of Jesus rested on the idea that all humans were inheritors of universal sin by sharing a common ancestor in Adam. Obviously polygenism undermined this crucial axiom of Christian faith. Although Nott gave lip service to the idea that, "The plurality of species in the human race does no more violence to the Bible, than do the admitted facts of Astronomy and Geology"[66] he relished the fact that his lectures on race were disturbing to Christians.[67]

The most fervent opposition to Nott's theory came from abolitionists in the North who saw the proslavery implications of polygenism and Southern conservative Christians who believed that Nott's denial of the inerrancy of Scripture and his rejection of Adam as the patriarch of all mankind was nothing short of blasphemy.[68] But in the face of this opposition Nott remained, "indifferent to the censure of those who hold up Christ as their

[65] Josiah C. Nott, *Two Lectures on the Connection Between the Biblical and Physical History of Man* (New York: Bartlett and Welford, 1849), pp. 7.
[66] Josiah C. Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*, pp. 5.
[67] William Stanton, *The Leopard's Spots,* pp. 122.
[68] Both Frederickson and Stanton disagree on the acceptance of polygenism in the South. Stanton is of the opinion that Southern religiosity was too strong to accept what amounted to the rejection of Biblical truth and one of Christianity's most foundational beliefs: human descent from Adam. Frederickson, however, makes a compelling argument that the popularization of polygenism in the South by figures like Samuel Cartwright smoothed over potential conflicts with Biblical scripture by showing how polygenism could be supported with creative interpretations of the story of Cain or the Curse of Ham. For more on their contrasting views see Stanton, *The Leopard's Spots*, pp. 192-196; Frederickson, *The Black Image in the White Mind*, pp. 82-90; 256-282.

model, while they are pouring out phials of wrath."[69] This was because Nott's interest in the modernization of Christian thinking was self-serving. Nott exploited the use of Biblical criticism to champion the separation of the Bible from the pursuit of scientific truth, which he hoped would precipitate "the day when the natural history of man will burst the trammels which have so long held it captive."[70] Nott was an advocate of scientific progress and wrote of the Bible that, "the inspired writings must be abandoned, unless they can be reconciled with the clearly ascertained facts of science."[71] Nott saw himself as a man of scientific truth, not of religion.[72] This of course makes the continued use of Christian ideas—such as the story of Noah's descendants—within his framing of racial descent all the more peculiar for someone who wanted to separate the natural history of mankind from the Biblical tradition.

In Nott's estimation, the repopulation of the earth through the descendants of Noah and the timeline of human existence under the Usher chronology meant that either the environment could create new racial populations in a radically shortened time span or that God directly intervened in human history to create a "Negro" race from white blood. Both notions, according to Nott, contradicted the methods of scientific naturalism and flew in the face of common sense understandings of the pace at which the environment changed the physical constitution of an organism. For Nott this meant that the races had been created separately since the before the time of Moses and the beginning of the first human civilization. Thus in his effort to put the Bible and the science of human origins

[69] Josiah C. Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*, pp. 1.
[70] Ibid., pp. 7.
[71] Nott, *Two Lectures on the Biblical and Physical History of Man,* pp. 14.
[72] George M. Frederickson has a different view on Nott's commitment to scientific truth. As mentioned earlier in, Frederickson is of the mind that Nott used ethnology to support his assumptions about the inferiority of blacks, which in turn offered evidence for his political agenda against black suffrage. In short Nott's interest lie in politics not science. For a view that takes Nott's commitment to scientific truth more seriously see, William Stanton's, *The Leopard's Spots*, pp. 65-72; 192-196.

on separate footing the story of Noah's descendents continued to prevail within Nott's scientific theory that seemed to suggest the Bible was true insofar as it accounted for the origins of only the white race.

Races Map onto Places

There is another site within Nott's first public lecture on race where Christian ideas loom large despite his secular aspirations. To account for the persistence of racial traits, Nott claimed each of the races were formed within climates and environments where they were properly suited to thrive. In this theory Nott likened nature to an orderly, purposive and prudent force capable of spawning fixed and enduring traits that continued to permanently distinguish the various racial. Nott's conception of persistent racial traits was indebted to Samuel Morton's ethnological data on human crania.

Beginning in the late 1830's, Morton established a relationship with G.R. Gliddon, who was conducting archeological studies of the Egyptian monuments while serving as the United States Council for the city of Cairo.[73] Morton convinced Gliddon to send him the skulls of the Egyptians and the cranial remains of other populations he discovered along the Nile, and eventually amassed one of the largest collections of ancient human skulls by any naturalist working in the nineteenth-century.[74] Morton's examinations of these skulls were published in his work *Crania Aegyptiaca* in 1844—the very same year Nott delivered his public lectures on the history of "Caucasians" and "Negroes" in Mobile, Alabama.

[73] Samuel George Morton, *Crania Aegyptiaca; or Observations on Egyptian Ethnography derived from Anatomy, History and the Monument* (Philadelphia: John Penington, Chestnut Street, 1844), pp.1-2.
[74] Gould, *The Mismeasure of Man*, pp. 82.

Morton classified the various skulls of Egyptians and other nations they had come in contact with according their racial traits. He thus identified skulls belonging to "the Celts," "the Scythians," also known as the ancient Iranians, "the Pelasgic nation" referring to populations located in Greece and Italy, "the Semitic nations," "the Hindoos," "the Arabs," and "the Negroes."[75] In order to determine which nations belonged to the ancient Egyptian lineage, Morton organized the skulls according to the similarities of their size and volume—the latter of which Morton determined by filling the skulls with lead and grain seeds. Morton thus arrived at the following four classifications: "the Artco-Egyptians" which entailed the "purer Caucasian nations" as seen in Semitic and Pelasgic nations; "the Austro-Egyptians," where it appeared that "the cranium blends the characters of the Hindoo and Southern Arab;" "the Negroloid crania," which were admixed populations with the crania of present day "Negroes" but shrouded with "harsh and sometimes wiry" long hair; and lastly the "Negro," with the least-developed crania and the smallest brain volume of all the skulls that were compared.[76]

With his cranial typology, Morton plotted the location of "pure Caucasian heads" near and around Egypt, "at Memphis, near the mouth of the Nile, and as you ascend the river into the interior of African and approach Nubia, the Caucasian character is gradually lost—they become mingled with Negro and other tribes."[77] As he claimed that the presence of true "Caucasian" skulls began to dissipate further up the Nile into the heart of Africa, Morton concluded that Egypt was originally peopled by the Caucasian race. Corroborating Morton's conclusions, Nott claimed that:

[75] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*, pp. 14.
[76] Ibid., pp. 14.
[77] Ibid., pp. 15.

> Independent of the bearing of many of these interesting facts, the conclusion to my mind, is irresistible, that the civilization of Egypt is attributable to these Caucasian heads; because civilization does not now and never has as far as we know from history, been carried to this perfection by any other race than the Caucasian—how could any reasoning mind come to any other conclusion?[78]

Like most naturalists during the early part of the nineteenth-century, Morton's understanding of human ancestry relied upon the story of Noah following the Deluge. However, Morton was opposed to the theory that humans were derived from a common stock that then developed physical differences after adapting to various climates. In the introduction to *Crania Americana* Morton raised the question of whether, "It is not more consistent with the known government of the universe to suppose, that the same Omnipotence that created man, would adapt him at once to the physical, as well as to the moral circumstances in which he was to dwell upon the earth?"[79] For Morton, much like Nott just a few years later, it was "difficult to imagine that an all-wise Providence, after having by the Deluge destroyed all mankind excepting the family of Noah, should leave these to combat, and with seemingly uncertain and inadequate means, the various external causes that tended to oppose the great object of their dispersion."[80]

Presuppositions about the Caucasian ancestry of Noah's descendants are relevant here. Both Morton and Nott maintained that it was untenable to assume that populations descended from Caucasian ancestry could survive and populate regions in the Southern hemisphere where 17th and eighteenth-century colonial settlers often fell ill to disease and died while attempting to adapt to the environs of the New World. As a physician and early epidemiologist Nott was surely aware of the literature of the early English settlers

[78] Ibid., pp. 16.
[79] Morton, *Crania Americana*, p. 3.
[80] Ibid., pp. 3.

who wrote extensively about the difficulty of adjusting to the heat, terrains, diseases and limited dietary options available in the southern parts of North America and the Caribbean.[81]

Yet, in Nott's interpretation of why races appear to map onto specific geographical places he fell back upon long held Christian ideas about the wisdom of God mirrored in the order of nature. Nott explained that the various human races:

> Are not spread over the earth by chance, or without local relations, but the different regions of the world, may be said to have given origin to peculiar kinds, adapted respectively by their organization, to subsist under the local circumstances, among which they appear first to have been called into existence.[82]

Like Morton, Nott was begging the question regarding what appeared to be an apparent natural order governing the physical constitution of the non-human and human world alike. In Nott's view no plants could "be propagated out of the climate to which they are adapted by nature—and man forms no exception to the general law."[83] For Nott, this meant that by definition, species were "marked by peculiarities of structure, which have always been constant and undeviating" and that "two races are considered specifically different, if they are distinguished from each other by some peculiarities which one cannot be supposed to have acquired, or the other lost, through any known operation of physical causes."[84] Like fauna and flora Nott claimed that, "the white man cannot live in tropical Africa, or the African in the frigid zone."[85] For Nott this meant that if the Deluge was universal, then non-Caucasian races had been spawned separately after the flood. If

[81] See, Karen Ordahl Kupperman, "Fear of Hot Climates in the Anglo-American Colonial Experience," *William and Mary Quarterly* 41:2 (1984): pp. 213-240; Roy H. Merrens and George D. Terry, "Dying in Paradise: Malaria, Mortality, and the Perceptual Environment in Colonial South Carolina," *Journal of Southern History* 50:4 (November 1984): pp. 533- 550.
[82] Nott, *Two Lectures on the Natural History of the Caucasian and the Negro*, pp. 18-19.
[83] Ibid., pp. 19.
[84] Ibid., pp. 18.
[85] Ibid., pp. 19

the flood was not universal then non-Caucasians were unaffected and therefore did not belong to Adam's descendants. In either case non-Caucasians came into being within their own indigenous habitat and not from the loins of Noah's descendants.

Nott's thinking about race in this moment recapitulates an understanding of Nature described by the late seventeenth-century natural theologian Jon Ray. In his seminal work, *The Wisdom of God Manifested in the Works of Creation* (1691), considered a classic among the generation of naturalists who came of age with Charles Darwin, Ray professed the widely-held belief in the stability of the basic structures of life. There was a theological basis for this view of nature as both static and purposive. Ray argued that God had created all that has existed, and which has been "conserved to this Day in the same State and Condition in which they were first made."[86] The created world was static because at its inception God endowed plants and animals with traits and attributes that best prepared them to thrive in the environments where they were originally distributed. This distribution also occurred according to a divine plan. Ray explained:

> There is no greater; at least no more palpable and convincing Argument of the Existence of a Deity, than the admirable Art and Wisdom that discovers itself in the Make and Constitution, the Order and Disposition, the Ends and Uses of all the Parts and Members of this stately Fabrick of Heaven and Earth.[87]

In effect, the prudence of God was mirrored in the structures each organism manifested as well in the locale of his creations.[88] This understanding of Nature fleshed out the implications of the claim in Genesis that God gave shape to a world that was void and formless. Nott's geographical view of race was premised on the religious notion that the

[86] John Ray, "Preface" in, *The Wisdom of God Manifested in the Works of Creation* (London: William Inney and Richard Manby for the Royal Society of London, 1735[1691]).
[87] John Ray, "Part 1" in, *The Wisdom of God Manifested in the Works of Creation* (1691).
[88] Greene, *The Death of Adam*, pp. 5-6.

shape of the human form and the distribution of populations across the globe, did not happen randomly or by chance, but was governed by God. In the final section below we will see how this vision of race being governed by a natural order was the grounds for Nott's opposition to racial mixing.

Racial Hybridity Transgresses the Intentions of God/Nature

Nott brought his first public lecture on race to a close by making a finer point on his claim that there is an order and purpose behind the distribution of human populations and their various racial characteristics. Nott claimed that:

> Wherever colonies of Europeans have been formed, in temperate countries, they have soon flourished, and the white population has multiplied so fast, as to encroach upon the native, and in many instances, entirely supersede them. But in Africa, colonies of Europeans and Asiatics have dwindled away and become extinct [*sic*]. The coast of [Zanzibar] was colonized many centuries ago by Arabians, and afterwards by Portuguese […] but the climate has prevented this population from flourishing and multiplying. Were it not for these facts we should certainly see white colonies there like everywhere else.[89]

Nott goes further:

> No black race in short has been, or can be established at any great distance from the equator. Look at the bills of mortality in our northern cities, and you will see the proportion of deaths amongst the blacks, increasing as you go north, until you get to Boston, where the proportion is three to one compared to the whites.[90]

Nott is referring to the highly controversial 1840 U.S. census, which misrepresented black mortality rates. The studies were flawed, biased in favor of proslavery apologists, and were driven by the assumption that innate biological constitution weighed greater than living conditions (slavery) when it came to the mortality of a racial group.[91] But with this data on black mortality, Nott was trying to argue that there were consequences to

[89] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races,* pp. 19.
[90] Ibid., pp. 19.
[91] See Melissa Nobles, *Shades of Citizenship: Race and the Census in Modern Politics*, pp. 31-35.

breaking natural law. Death and extinction can ensue if racial groups are taken out of their habitat. Thus not only is nature purposeful, it is also capable of retribution in the event a transgression is made against its laws. God and Nature seem to be collapsed in Nott's attempt to account for racial differences. It was not just that racial distinctions were governed by natural law. It was also the case that the order of racial constitutions provided evidence for the purposiveness and inherent structure of nature. We might say that for Nott the wisdom of God was mirrored in the order of racial differences. The implications of Nature's wisdom with respect to human sexuality are elaborated in Nott's understanding of racial hybridity discussed in his second lecture to which we now turn.

In the second lecture Nott offered an account of human hybridization and made a case for the deleterious effects of race mixing. To do this, Nott built upon his theory of racial populations being fitted for specific climates and also relied upon the idea that there are limits to the effects of the environment upon the human form. In this lecture, Nott also carried to its logical conclusion what it means for mankind to be comprised of separate species "distinguished from each other by some peculiarities, which one cannot be supposed to have acquired, or the other lost, through any known operation of physical causes."[92]

Focusing almost exclusively on black and white differences, Nott first detailed the fixed anatomical variations that exist between Europeans and Africans. Nott begins with an assessment of the mental capacities between both groups explaining, "when the Caucasian and Negro are compared, one of the most striking and important points of difference is seen in the conformation of the head."[93] According to Nott, "the head of the

[92] Nott, *Two Lectures on the Natural History of the Caucasian and Negro Races*, pp. 17.
[93] Ibid., pp. 23.

Negro is smaller by a full tenth—the forehead is narrower and more receding, in consequence of which the anterior or intellectual portion of the brain is defective."[94] Citing the work of Franz Joseph Gall, who pioneered the science of phrenology in the early nineteenth-century, Nott adds:

> Dr. Gall, in his laborious researches, has established the important fact, which is now conceded, that there is in the animal kingdom, a regular gradation in the form of the brain, from the Caucasian down to the lowest order of animals, and that the intellectual faculties and instincts are commensurate with the size and form. In animals where the senses and sensual faculties predominate the nerves coming off from the brain are large, and we find the nerves of the Negro larger than those of the Caucasian.[95]

Nott, however, turned his attention toward much more than the perceived differences in brain size between American Negroes and Caucasians. He also claimed that "the arm of the African is much longer that than in the Caucasian" and that "the chest of the Negro is more compressed laterally." Nott also claimed that among Africans "the bones of the pelvis in the male are more slender and narrow; the muscles on the sides of the pelvis are less full, but more full posteriorly [*sic*]." Differences in the bend of the knee, the shape of the calves, feet and heel, and most importantly skin complexion are also cited. According to Nott, all of these anatomical differences beg the question:

> Can all these deep, radical and enduring differences be produced by climate and other causes assigned? It is incumbent on those who contend for such an opinion, to show that such changes either have taken place, or that similar changes in *the human race are now in progress*.[96]

Nott reasoned that it had been "about two centuries since the Africans were introduced into this country, the 8th or 9th generation is now amongst us, and the race is unchanged. The Negroes have been improved by comforts and good feeding which they have been

[94] Ibid., pp., 23.
[95] Ibid., pp. 23.
[96] Ibid., pp 25.

unaccustomed to; but they are Negroes still."[97] The unchanged physical constitution of so-called American Negroes proved, according to Nott, that there are limits to the effect of the environment upon the form of racial groups.

After listing the differences between the races, Nott then segued into explaining why racial admixture transgresses the laws of Nature. Nott contended that each of the present day races "descended from several or many original pairs."[98] These original stocks were pure ancestral populations, which over time became mixed with other racial groups. This meant that in the mid nineteenth-century "there [was] not at present a single unmixed race on the face of the earth."[99] But for Nott, the admixture of present-day humans was a precarious situation, as "no one can calculate the results which may result from crossing races."[100] To prove this point, Nott turned to the so-called American "mulatto" which he argued represented the amalgamation of the two most strikingly different racial populations.

Nott claimed to draw upon "fifteen years of professional intercourse and observations" when he came to the conclusion that mulattoes are "the shortest lived of any class of the human race," "are the intermediate in intelligence between blacks and whites," with mulatto women being "particularly delicate, and subject to a variety of chronic diseases" making them "less prolific than when crossed on one of the parent stocks," and "are less capable of undergoing fatigue and hardships, than the blacks or whites."[101] Nott also concluded that the offspring of black-white unions "are shorter

[97] Ibid., pp. 26.
[98] Ibid., pp. 28.
[99] Ibid., pp. 28.
[100] Ibid., pp. 29.
[101] Ibid., pp. 31-32.

lived, and […] that they are more liable to be diseased and are less capable of endurance than either whites or blacks of the same rank and condition."[102]

Nott saw that there were natural laws of hybridity responsible for the physical and intellectual differences thought to afflict mulattoes. One such law was the law of atavism where:

> Those hybrids, (which do breed) when bred together, have a tendency to run out, and change back to one of the parent stocks—the hybrid geese for instance, if kept alone, degenerate into common geese in a very few generations. This has been remarked too, in the mulattoes of the West Indies, and there are now families in Mobile from the same parents, some of whom are nearly black, and others nearly white; where there is every reason to believe that the mothers have been faithful to their husbands.[103]

Hybrid offspring inevitably reverted back to the racial type of one of its progenitors.

Nott cites "another general law laid down by naturalists" where "the hybrid derives its size and internal structure principally from the mother; a striking example of which is given in the mule."[104] Yet interestingly, in the case of black-white unions, "this important law of nature is reversed," whereby "in the offspring the brain is enlarged, the facial angle increased, and the intellect improved in a marked degree."[105] Clearly Nott was placing white men in a favorable light with the "discovery" of this natural law.

Nott asked that with the poor health, physical constitution, and low reproductive rate of the mulattoes "is it not reasonable to believe that the human hybrid may also have its peculiar laws" and perhaps might one of "these laws be (which is a reasonable inference from foregoing data) that the mulatto is a degenerate, unnatural offspring,

[102] Ibid., pp. 34.
[103] Ibid., pp. 32.
[104] Ibid., pp. 32.
[105] Ibid., pp. 33.

doomed by nature to work out its own destruction [?]"[106] The grounds for thinking in this way come from Nott's background in horse breeding. According to Nott "breeding from a faulty stock; a stock which has been produced by a violation of nature's laws" yields "more and more degenerate [forms] in each succeeding generation."[107] It was clear for Nott that "the parent will transmit to the child, not only his external form, character, expression, temperament [etc] but diseases, through many generations, as insanity, gout, scrofula, consumption."[108] The question for Nott was "why then may not that defective internal organization which leads to ultimate destruction exist in the mulatto?"[109] The persistence of compromised physical constitutions within mulattoes suggested to Nott that these unions transgressed natural laws aimed at keeping the bloodlines of each race unmixed. By rendering them biologically inferior when compared to their parental stocks, Nott reasoned that nature was attempting to eliminate aberrant creations.

Fortunately, the flaws in Nott's reasoning about so-called "hybrids" did not go unnoticed by his contemporaries. In the April 1845 issue of the *Southern Quarterly Review,* the American botanist and Episcopal minister Moses Ashley Curtis published a scathing review of Nott's two lectures. According to Curtis, Nott had placed too strict an interpretation on the laws of nature and had over generalized the law of geographical distribution of animal and plant life.[110] Humans, much like animals and plants, were subject to the forces of the environment and underwent physical changes. Thus monogenesis still seemed a plausible theory for human origins. Concerning Nott's theory of racial hybridity, Curtis reasoned that not only were racially mixed people prolific but

[106] Ibid., pp. 34.
[107] Ibid., pp, 34.
[108] Ibid., pp. 34.
[109] Ibid., pp. 34.
[110] Stanton, *The Leopard's Spots*, pp. 76.

that Nott's claim about hybrids returning to one of their parent stocks also applied to varieties within the species.[111] According to Curtis, the phenomenon of atavism was not a sufficient ground for arguing that Africans and Europeans constituted separate species.

Nott's criterion for the divergence of two populations into separate species is problematic in another important respect. By claiming that two races were "distinguished from each other by some peculiarities which one cannot be supposed to have acquired, or the other lost, through any known operation of physical causes," Nott left out of the equation the role that mating played in distributing traits between populations. Nott's conceptual commitments to the fixity of racial traits, the natural law of racial distribution, and his distain for mixing the blood of disparate populations left him with an improper understanding of the difference between varieties in a population and wholly separate species.

Despite the shortcomings of his theory Nott's two lectures on the ancestry of Caucasians and Africans were a smashing success among like-minded naturalists, the Southern educated elite, and moderate Christians.[112] These lectures also established his reputation both in the US and abroad as key figure of an emerging "American School" of ethnologists eager to modernize the study of mankind.

Conclusion

What is both fascinating and troubling about the arguments of nineteenth-century polygenists are the various logics and methods they used to convert ostensibly race specific features, such as the slope of the forehead, brain volume, limb lengths, and

[111] Ibid., pp. 76.
[112] Stanton, *The Leopard's Spots*.

incidences of disease, into quantifiable "objects" of scientific inquiry. For Nott, the theory of polygenism freed thinkers to see how the existence of permanent racial traits was simply a fact that could "be as clearly demonstrated as the revolution of the earth around the sun, the discoveries in geology, the circulation of the blood."[113] Racial traits were treated as though they were material objects that stubbornly and unchangingly mapped onto specific human bodies and were passed down through successive generations. More than this, the features that differentiated the races had a purpose relative to adapting and thriving in their natural environment. In this recuperation of a theological argument for the geographical distribution of the races, which scholars since the seventh-century had framed in terms of the three son's of Noah, polygenists like Nott and Morton emphasized the existence of racial differences was indicative a natural order. However, the precision through which nineteenth-century naturalists were able to inferentially map human racial traits back through time to their perceived ancestral sources gave polygenists a powerful tool to contest the Christian account of common descent. Polygenists exploited what they saw as the lack of "material" objects to corroborate the "unity hypothesis." They reasoned that anyone in the nineteenth-century could point out how, at even a casual glance, each racial group possessed striking physical, moral and developmental differences. Polygenists thus wanted a theory of human origins that could consistently account for the tangible racial differences they perceived while being realistic about the length of time for humans to manifest the forms of physical and moral alterity they observed in the "barbarous races." To this end they were willing to abandon the traditional understanding of the Christian creation story in

[113] Josiah C. Nott, "Diversity of the Human Races," *De Bow's Review*, 10 (1851), pp. 113.

favor of an account of human racial differences consistent with what appeared to be the stability and deep-rooted nature of racial traits.

But Nott's disdain for the conceptual constraints imposed by the Mosaic record did not mean that his ideas about race were freed from the rudiments of Christian discourse that had guided naturalists and natural theologians in previous centuries. Rather than completely setting the natural history of mankind and the Bible on separate footing Nott developed a scientific theory that affirmed the validity of the story of Noah's descendants insofar as it explained the origins of the white race. For Nott it seemed inconceivable that under the Ussher chronology the white descendants of Noah could have repopulated the continent of Africa with both white and black people in less than 500 years. In addition to his retention of Biblical concepts, Nott's conception of race continued to uphold metaphysical ideas about species fixity, purposiveness of the human form, the geographical distribution of mankind and the recent human antiquity. These were ideas shared by Christians with a literal reading of the Bible and by naturalists who defended the theory of human unity. Indeed, what made Nott's theory of polygenesis so troubling for nineteenth-century naturalists was that it was grounded by many of the metaphysical presuppositions shared by monogenists. Yet, to make these beliefs cohere with new ethnological "data" about racial difference, Nott arrived at a different set of conclusions regarding human unity. In effect, Nott exposed how incompatible the belief in monogenesis was with the belief in recent human antiquity and the notion that there was a purpose, whether from God or Nature, behind the traits manifested by different species. Polygenesis was a plausible explanation because it could account for the differences between the races while maintaining the traditional chronology and the

widely held belief in the natural order of things. Thus, Nott's polygenist theory was not a radical break from the Christian tradition but one that worked with it by marshalling longstanding religious precepts to develop new ideas about race. Given the enduring religious "thought patterns" within his theory Nott's understanding of race was not fully secular, even though he intended it to be.

Ultimately, Nott failed to realize what Darwin began to articulate in the *Descent of Man*, but was only fully grasped many generations later by biologists after WWII: that a truly secular science of mankind did not involve framing human difference in terms of static races, but rather entailed a rigorous account of how human differences were transitory and at best heuristics used to organize our self-understanding as a species.[114] In other words, the very belief in permanent racial types was itself was a carryover of the Christian heritage from which Nott looked to free himself. This was a heritage whose theological origins predisposed thinkers to view the world as an ordered, stable, coherent system, not a universe in flux and riddled by chance and contingency as Darwin had grasped in his account of evolution by natural selection. The idea of clearly defined, discrete, and fixed racial types only made sense when paired with the belief that nature was sustained by a teleological order.[115] But with the theory of evolution, Darwin had discovered that change, not fixity, was the only constant force in the universe. Thus the notion of natural kinds and associated ideas about discrete and fixed racial types belonged to an older tradition of thought whose legacy was coming to an end. The racial

[114] Ashley Montagu, *Statement on Race: An Extended Discussion in Plain Language of the UNSECO Statement by Experts on Race Problems* (New York: Henry Schuman, 1951), pp. 40. See also, Jonathan Marks, "Race: Past, Present, Future" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008).
[115] See John C. Greene's discussion of how Darwinian evolution upset the static view of species in, *The Death of Adam*, pp. 304-307.

thinking of American polygenism, of which Nott was a key figure, still clung to the last vestiges of a theological worldview that been sustained by naturalists over many centuries in their creative marriage of the Biblical tradition, theological axioms and scientific observation. Here lies an overlooked paradox at the heart of nineteenth-century American polygenist science.

Chapter 3

Common Ancestry, Uncommon Traits: The Resurgence of Polygenism during the American Social Hygiene Movement

Introduction

According to conventional wisdom the defense of common human descent provided by Charles Darwin and Alfred Russell Wallace settled the question of whether or not present day racial groups shared an ancestor by the end of the nineteenth-century.[1] Although Darwin and Wallace offered two of the most compelling defenses of common human origins for their generation, the wider acceptance of evolutionary theory during later half of the nineteenth-century did not prevent the growth and spread of scientific racism across Europe and America during the. Neither did Darwin and Wallace's defense of monogenism exhaust polygenist conceptions of race. As George Stocking argued, an evolutionary account of human origins provided turn of the century scientists on both sides of the Atlantic a new language for recovering polygenist styles of reasoning about human difference.[2]

This was particularly true in the field of late nineteenth-century physical anthropology where scientists took precise measurements of the human body, believing that each race could be represented by a unique collection of physical traits. In 1864 the Anthropological Society of London published an English translation of the German evolutionary anthropologist Karl Vogt's work *Lectures on Man: his Place in Creation and in the History of the Earth*. Vogt held a polygenist view of race, claiming that natural

[1] John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought*, (Ames: Iowa State Press, 1977[1959]), pp. 309-339.
[2] George Stocking, "The Persistence of Polygenist Thought in Post Darwinian Anthropology" in, *Race, Culture and Evolution: Essays in the History of Anthropology* (Chicago: Chicago University Press, 1982).

selection had formed each race so far in the past that their present differences were permanent.[3] Vogt also argued that the so-called white, black, and yellow races—a tripartite division of the human species that was a carryover from the Biblical story of Noah's three sons Shem, Ham, and Japheth—descended from three distinct species of ancestral races.[4] Earlier than Vogt, Paul Broca in his 1856 work *On the Phenomenon of Human Hybridity in the Genus Homo* drew upon extensive data on human physical variation—afforded by his unique instruments for human measurement—to argue that the races had evolved in such separate directions that mating between groups with significantly different traits could yield infertile offspring; what he referred to as "dysgenic crosses."[5] There was also the polygenist work of the French physician and physical anthropologist Paul Topinard. Topinard became well known as one of Paul Broca's most popular disciples.[6] Although his polygenist views were less rigid than Broca, insofar as Topinard saw there were traits that divided Europeans into different stocks, he nonetheless shared the views of Broca and Vogt that each of the major races were designed for a specific geographic location and descended from their own unique ancestral ape.[7]

The new data and corresponding racial theories developed by Broca, Vogt, and Topinard allowed scientists to refashion pre-Darwinian polygenism into three widely pervasive assumptions held by many American, British and German scientists by the end of the nineteenth-century: races over time came to be biologically distinct groups, racial

[3] Karl Vogt, *Lectures on Man: His Place in Creation and in the History of the Earth* ed. James Hunt (London: Longeman, Green, Longman, and Roberts, Paternoster Row, 1864).
[4] Ibid.
[5] Paul Broca, *On the Phenomenon of Hybridity in the Genus Homo* (London: Longeman, Green, Longman, and Roberts, Paternoster Row, 1864 [1856]).
[6] Stephan Jay Gould, *The Mismeasure of Man* (New York: W.W. Norton and Company, 1996), pp. 116.
[7] John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism, and Science: Social Impact and Interaction* (News Brunswick, NJ: Rutgers University Press, 2006), pp. 73.

traits were inherited, and the environment had little to no effect on the shape of the human form.[8] The biologists and physical anthropologists that drew upon these ideas also held that physical racial traits corresponded to distinct mental states and moral capacities.

Much of the literature on the spread of scientific racism in Europe and the U.S. at the turn of the twentieth-century has focused on the persistence of polygenism within physical anthropology and psychology.[9] The polygenic conception of race developed within these fields allowed physical anthropologists to deploy new techniques for separating whites from other races and also provided a way to separate Europeans into three distinct populations: the Teutonic, the Alpine, and the Mediterranean.[10] This division of European ancestry came with assumptions about the superiority of Anglo-Saxons over and against Irish and Southern European stocks and played a crucial role in the religious, economic, and political discrimination of non-Teutonic European stocks well into the U.S. well into the middle of the twentieth-century.[11]

This chapter, however, looks at a less known field of study where polygenic views of race were equally influential at the start of the twentieth-century. I explore how polygenist carryovers made their way into early twentieth-century medical and public health studies on the links between race and disease in the United States. Starting around the 1920's many physicians and public health experts mirrored the assumptions held by

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[8] Ibid., pp. 72-76.
[9] See for example: George Stocking, "The Persistence of Polygenist Thought in Post Darwinian Anthropology" in, *Race, Culture and Evolution: Essays in the History of Anthropology*; John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism, and Science: Social Impact and Interaction*; Nancy Stepan *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden, CT: Archon, 1982).
[10] John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism, and Science: Social Impact and Interaction* pp. 74-75.
[11] Reginald Horsman, *Race and Manifest Destiny: The Origins of American Racial Anglo-Saxonism* (Cambridge: Harvard University Press, 1981); Matthew Pratt Guterl, *The Color of Race in America, 1900-1940* (Cambridge: Harvard University Press, 2001); Mathew Wray, *Not Quite White: White Trash and the Boundaries of Whiteness* (Durham: Duke University Press, 2006).

physical anthropologists about the stability of racial types, the separateness of different racial lineages, and the limited effect of the environment on the human form.

During the first half of the twentieth-century Americans witnessed the emergence of a medical-scientific discourses eager to discern the health and behavioral consequences of distinct racial ancestry, particularly that of the "black body" and the transmission of traits across several generations.[12] During this historical moment known as the Progressive Era, social reformers, scientists, and politicians championed the use and application of methods and data generated by science to address and eliminate social problems.[13] This pragmatic understanding of scientific knowledge drove the American Eugenics movement. American Eugenicists, following the rediscovery of Gregor Mendel's laws of heredity in 1900, convinced the nation that the condemnation and sterilization of the feeble minded, sexually deviant, and the racially inferior was the most effective way of shaping the course of human evolution by weeding out the "unfit."[14] Eugenic reformers were also an influential force behind the anti-miscegenation laws that swept the country at the turn of the new century and played a hand in the Immigration Act of 1924 that restricted the influx of Southern and Eastern Europeans, and Asians into

[12] Harriet A. Washington, *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present* (New York: Anchor Books, 2006); Melbourne Tapper, "An 'Anthropathology' of the 'American Negro': Anthropology, Genetics, and the New Racial Science, 1940-1952," *The Society of the Social History of Medicine* 1997, Vol. 10, No. 2, pp. 263-289; Keith Wailoo, Dying in the City of Blues: Sickle Cell Anemia and the Politics of Race and Health (Chapel Hill: The University of North Carolina Press, 2009); Keith Wailoo, *How Cancer Crossed the Color Line* (New York: Oxford University Press, 2011); Nancy Ordover, *American Eugenics: Race, Queer Anatomy, and the Science of Nationalism* (Minneapolis: University of Minnesota Press, 2003).
[13] W. Michael Byrd and Linda A. Clayton, *The American Dilemma: Race, Medicine, and Health Care in the United States, 1900-2000* (New York: Routledge, 2002), pp. 38.
[14] Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Cambridge: Harvard University Press, 1995), pp. 46-49.

the United States.[15] These laws were driven by the fear that race mixing was an affront to the ways of Nature and would have a detrimental effect on the lifeblood of the nation.

The concern about racial differences had a telescoping effect. Scientists at the start of the new century began to look beyond simply the skin and into the body itself to find evidence of biological difference. Just shortly after the ABO blood system was discovered in 1900 by the Austrian born scientist Karl Landsteiner, Polish microbiologists Ludwik and Hanka Hirschfeld claimed in 1919 that a population's blood type was a racially inherited trait.[16] The notion that each race possessed distinct blood quickly caught on in the US as military and civilian doctors, following the guidelines of the US War Department, prohibited the use of African American blood to perform transfusions with individuals from other racial groups.[17]

Also during this time scientists were discovering racial differences in the brain. Beginning in 1917, American psychologists Lewis M. Terman and Robert M. Yerkes popularized IQ testing to the American public.[18] They claimed to be able to quantify the intelligence of each race, shoring up long held convictions about the correlation between race, brain size, and intelligence.[19] IQ testing was initially used by the military between 1917 and 1918 as a means for screening military recruits. The military found that the 1.7 million young men who took these tests were found to have the minds of "10-14 year old

[15] Ibid., pp. 96-98.
[16] Ludwik and Hanka Hirschfeld, "Serological Differences between the Blood of Different Races," *Lancet* October, 1919, Vol. 194, No. 5016, pp. 675-679.
[17] William H. Schneider, "Blood Transfusions Between the Wars" in, *Journal of the History of Medicine and Allied Sciences* 2003 58:2, pp. 221-222.
[18] Stephan Jay Gould, *The Mismeasure of Man* (New York: W.W. Norton and Company, 1996), pp. 176-188.
[19] Jonathan Marks, *Human Biodiversity: Genes, Race and History* (New Brunswick: Transaction Press, 2009), pp. 117-124.

children."[20] Blacks and non-Anglo-Saxons did not fair well in these examinations. The Princeton Psychologist Carl Brigham in his ground breaking *A Study of American Intelligence* (1923) claimed that the distinct ancestry of blacks, what he referred to as their "nativity" was the primary cause behind their low IQ scores which ranked at the bottom of all racial groups.[21] According to Brigham the mixture of racial groups with distinct "nativities", and particularly any mixture involving blacks, would have profound implications for the average intelligence of the nation. Brigham claimed that:

> According to all evidence available, then, American intelligence is declining, and will proceed with an accelerating rate as the racial admixture becomes more and more extensive. The decline of American intelligence will be more rapid than the decline of the intelligence of European national groups, owing to the presence here of the negro. These are the plain, if somewhat ugly, facts that our study shows. The deterioration of American intelligence is not inevitable, however, if public action can be aroused to prevent it. There is no reason why legal steps should not be taken which would insure a continuously progressive upward evolution.[22]

Much like polygenists in the nineteenth-century, American psychologists interested in race were fearful of the social consequences of mixing human groups who were believed to have fixed and heritable biological differences that could not be altered by climate or the environment.

Fears about distinct racial ancestry and racial admixture were simply exacerbated by the spread of Social Darwinism in the US at the start of the new century. Social Darwinism took on many different forms, ranging from the advocacy of restricting the power of the landed aristocracy to the full endorsement of cutthroat competition between

[20] Byrd and Clayton, *An American Dilemma*, pp. 126.
[21] Carl Brigham, *A Study of American Intelligence* (Princeton: Princeton University Press, 1923), pp. 224
[22] Carl Brigham, *A Study of American Intelligence*, pp. 242.

individuals through laissez-faire capitalism.[23] The former view believed that novel and natural forms of leadership had developed with the rise of the professional middle class, which should be allowed to take its place as the dominant influence on society.[24] Whereas advocates of laissez-faire capitalism, believed that human progress could only be achieved if the state withdrew all efforts to limit the freedom of its individual citizens, allowing everyone to succeed or fail according to their own abilities.[25] Darwin himself was of the mind that individual and tribal struggle played an important role in the evolution of the human race as a whole.[26] He was also believed that sex selection must remain a feature of even the most civilized nations. Darwin was concerned that the decline of prudent forms of "selection" with advanced societies allowed the least fit to thrive in potentially harmful numbers.[27] Despite this, Darwin was unwilling to endorse the more extreme forms of competition between individuals (i.e., radical laissez-faire economic policies) at the expense of the equally important need for cooperation.[28]

It has been well documented that the more radical expressions of Social Darwinism, particularly the laissez-faire theories of the British sociologist Herbert Spencer, were widely circulated among the economic and intellectual elite in the US starting at the turn of the twentieth-century.[29] In his influential works *Social Statics*

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[23] Richard Hofstadter, *Social Darwinism in American Thought* (Boston: Beacon Hill Press 1992[1959]); R.J. Halliday, "Social Darwinism: A Definition" *Victorian Studies* June 1971, Vol. 14, No. 4, pp. 389-405; James Allen Rogers, "Darwinism and Social Darwinism" *Journal of the History of Ideas* April-June 1972, Vol. 3, No. 2, pp. 265-280; Greta Jones, *Social Darwinism and English Thought: The Interaction between Biological and Social Theory* (London: Harvester Press, 1980); Peter Bowler, *Evolution: The History of an Idea* (Berkeley: UC Berkeley Press, 1983).
[24] Bowler, *Evolution*, pp. 286.
[25] Ibid., pp. 286.
[26] Ibid., pp. 286.
[27] Ibid., pp. 286.
[28] Ibid., pp. 286.
[29] Hofstadter, *Social Darwinism in American Thought*; Lee Baker, *From Savage to Negro: Anthropology and the Construction of Race, 1896-1954* (Berkeley: UC Press, 1998); John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism, and Science: Social Impact and Interaction*.

(1851) and *The Man versus the State* (1884), Spencer claimed that the development from primitive to advanced capitalistic societies were key steps in human social and biological evolution.[30] In his view individual freedom was indispensible for the progress of society as it facilitated blending the disparate efforts of individuals toward the collective advancement of society. Thus Spencer believed that the state should not make interventions within the lives of its citizens, particularly those most unsuccessful in the open competition with the most fit.[31] Spencer's dictum "the survival of the fittest", gave Americans a new lens for understanding how the laws of natural selection were at the center of race relations.

Leading American social Darwinists such as Daniel Brinton, Frederic Ward Putnam, John Wesley Powell, Madison Grant as well as the Yale economist William Graham Sumner, believed at the start of the twentieth-century that the future of the nation could only be secured through the elimination of the racially inferior stocks via unrestrained competition and the absence of government intervention on behalf of their well being.[32] This version of Social Darwinism was used to justify the segregation of blacks and whites in the US and as well will see was a driving ideological force behind Progressive Era social science.[33] Indeed social Darwinism provided the rationale in the decision to uphold the laws of segregation in *Plessy v. Ferguson* (1896) where the majority opinion of the US Supreme Court ruled, "if one race be inferior to the other

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[30] Bowler, *Evolution*, pp. 287.
[31] Hofstadter, *Social Darwinism in American Thought*; Bowler, *Evolution*, pp. 287.
[32] Hofstadter, *Social Darwinism in American Thought*; Baker, *From Savage to Negro*, pp. 26-49.
[33] George Frederickson, *The Black Image in the White Mind: The Debate on Afro-American Character and Destiny, 1817-1914* (Middleton: Wesleyan University Press, 1971); Baker, *From Savage to Negro: Anthropology and the Construction of Race, 1896-1954*; John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism, and Science: Social Impact and Interaction*.

socially, the Constitution of the United States cannot put them upon the same plane."[34] This landmark case established the constitutionality of statutory segregation and set a precedent for a series of laws that transformed biological theories of human difference and black inferiority into a stark public and legal reality.[35]

The mantra of the "survival of the fittest" and the belief in the limited government intervention within the lives of those deemed racially inferior would have dire consequences for the administration of healthcare services to blacks and other racial minorities. According to the medical historians W. Micheal Byrd and Linda Clayton:

> Social Darwinists, such as sociologist William Graham Sumner of Yale, biologists and president of Stanford David Starr Jordan, and MIT's Frances Amasa Walker, felt that health promotion-disease prevention and medical therapeutic interventions for the poor perpetuate 'inferior' genetic line. Such activities subverted the scientific mechanisms of 'survival of the fittest.' Therefore, working-class, immigrant, and minority populations' receipt of health care that could often be described as scant and inferior was logical, if not desirable.[36]

Access to high quality healthcare thus became a part of white privilege and reflected Americans beliefs that medical resources were better spent on racial populations who were naturally fit.

When one reflects on the racial views that were prevalent among American physicians, scientists, and political leaders at the start of the twentieth-century it is apparent that a polygenist and non-Darwinian conception of human diversity carried the day.[37] The very idea that racial groups could have set differences in intelligence, blood

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[34] Plessy vs. Ferguson, Judgment, Decided May 18, 1896; Records of the Supreme Court of the United States; Record Group 267; *Plessy v. Ferguson*, 163, #15248, National Archives.
[35] Ibid., pp. 23-25.
[36] Byrd and Clayton, *An American Dilemma*, pp. 47.
[37] This is a position originally argued by George Stocking who claimed in the mid 1960's that a polygenist conception of race continued to survive among twentieth century American anthropologists. See Stocking's essay "The Persistence of Polygenist Thought in Post Darwinian Anthropology" in, *Race, Culture and*

type, health or moral behavior was philosophically antithetical to the theory of Darwinian evolution.[38] For Darwin, racial traits were thought to be a temporal illusion, not a fixed fact of nature. In the *Descent of Man*, Darwin himself "doubted whether any character can be named which is distinctive of a race and is constant." For he saw that "the most weight of all the arguments against treating the races of man as distinct species, is that they graduate into each other, independently in many cases, as far as we can judge, of their having intercrossed." Darwin claimed it was "hardly possible to discover clear distinctive characters between [the races]."[39] In other words, the idea that each race possessed fixed racial characteristics was conceptually at odds with the theory of species malleability and the theory of common human descent.

In this chapter I show that the relevance and meaning of shared human ancestry continued to be a contested issue in the US even though Darwinian evolution was gaining widespread acceptance by many early century scientists. I argue that the continuation of this debate was strikingly apparent during the time of the American social hygiene movement beginning in the US during first few decades of the twentieth-century. Social hygiene reform swept across the country as Progressive-era physicians and statesmen looked to control venereal disease, regulate prostitution and increase public understanding of medical and scientific research on sexual health practices. In this chapter I focus specifically on the campaign against venereal illnesses within African American communities. Here I show how perceptions of racial difference within medical

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Evolution: Essays in the History of Anthropology (Chicago: Chicago University Press, 1982). More recently Nancy L. Stepan has agreed with Stocking in her discussion of physical anthropology and race in Great Brittan at the dawn of the new century in, *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden, CT: Archon, 1982).

[38] On this point I am following David Hull's discussion of Darwin's critique of the notion of fixed "natural kinds" in his work *The Metaphysics of Evolution* (New York: State University Press, 1989).

[39] Charles Darwin, "On the Races of Man" in, *The Descent of Man and Selection in Relation to Sex* (London: Penguin Classics, 2004), pp. 203.

science at this time were noticeably far from an evolutionary view that took shared human ancestry seriously and understood human traits as universally shared across all social groups. Instead, many public health researchers and medical practitioners grew convinced that distinct biological lineages explained why some populations were susceptible to certain diseases more than others.

By the start of WWI it was widely believed by medical practitioners that venereal diseases were an innate feature of "Negro" biology as opposed to a socially determined illness. I argue that polygenesis therefore gained a new lease on life through an early twentieth-century medical-scientific discourse that took distinct human ancestry and unique racial dispositions as the source of varying susceptibility to venereal illnesses. Although public health researchers and social scientists had loosened up on the language of fixed racial traits—which had been fervently defended by nineteenth-century polygenists like Josiah Nott—they were committed to the idea that innate racial dispositions explained why blacks contracted venereal disease at higher frequencies than whites. In other words, physiological traits were variable, racial behavior and health susceptibilities were not. Of course we will see that the line between racial trait and racial disposition was often blurred in the minds of many. Indeed, understanding the societal risks associated with these inherited dispositions was a part of what turn of the twentieth-century public health researchers, social scientists, and politicians called "the Negro" problem.[40]

Fortunately there was a counter weight to these resurgent polygenic views of race. In this chapter I also discuss the efforts of social hygienists who actively defended the notion of common human descent in their understanding of the different rates of

[40] Baker, *From Savage to Negro*, pp. 47-48.

susceptibility to communicable diseases. In particular I highlight the understudied work of Charles V. Roman (1864-1934). Roman was one of the South's leading African American physicians and social hygienists working out of Meharry Medical College in Nashville, Tennessee. In 1919 he was recruited by the U.S. Public Health Service to help with its campaign to stop the spread of venereal disease among black military men and African American communities across the country. As an advocate of public health reform Roman challenged the idea of so-called "race specific diseases," arguing that because humans belonged to the same species—their traits and dispositions were universal and therefore shared across the color line. He also affirmed that there were moral, social, economic, and political factors that had direct consequences for the health, biology, and various "traits" of a population. Roman reasoned that these social factors were the cause of present day differences between blacks and whites, which ultimately could be corrected through proper sexual education and socio-economic reform.

What was unique about Roman's understanding of disease and public health was that he explicitly drew upon Christian ideas to explain how common human descent should reframe early twentieth-century perceptions of race and disease. For Roman, shared ancestry as creatures of God implied that there was no such thing as race specific diseases or fixed behavioral traits. All humans were shaped by and drew from the same ancestral heritage that dated back to Adam. Roman insisted that theories of innate biological dispositions and notions of racial heredity ultimately overshadowed the relevance of common human ancestry for thinking about mankind's shared biological susceptibility to all diseases. Roman, along with other social hygienists reasoned that population differences were sure to occur if the races were subjected to different social,

economic and political living conditions. In his rejection of "race specific traits" Roman revived and transformed environmentalist accounts of human variation originally articulated by 18th century natural historians such as Blumenbach and Comte de Buffon. Both naturalists affirmed that species change was driven by the effect of external forces on the human form, rather than an innate essence that was impervious to the environment. At the same time, Roman leveled a critique against biological determinism that still has relevance today among contemporary epidemiologists who challenge linear associations between race and disease.[41] The creative marriage of Christianity and medical science that constituted Roman's approach to social reform foreshadowed the work of Civil Rights activists who took on public health issues during the 1950s.

In what follows I first describe the advancements within epidemiology that took place at the turn of the twentieth-century. The development of germ theory gave physicians a new framework for studying communicable illnesses and provided government more incentive to invest in medical research to improve the public health standards of the nation. I then show how the study of venereal diseases became entangled within medical-scientific studies on the biological and behavioral differences between the races. I trace the research efforts of social scientists and medical practitioners at the start of the new century who were convinced that the tendency of blacks to contract venereal disease was a racial trait that stemmed from their unique African ancestry. In effect, these early twentieth-century medical men and social scientists helped transform venereal disease from an illness afflicting all populations to a racialized disorder. Lastly, I detail Charles V. Roman's work as an advocate for social hygiene reform while working with

[41] For recent work investigating how social and environmental factors impact black/white health disparities see the work of Nancy Krieger, "Theories for social epidemiology in the 21st century: an ecosocial perspective" in, *International Journal of Epidemiology* 2001, Vol. 30, pp. 668-677.

the US Public Health Service. In my conclusion I offer reflections on how Roman's environmentalist account of the health disparities between blacks and whites gives us a window onto the way monogenism could function as both a scientific idea for organizing data about human difference, but also as an ethical and religious concept that could be used to question divisive claims about racial differences.

Late nineteenth-century Progress in Sanitary and Epidemiological Sciences

Before the 1860's the science of preventative disease, or sanitary science, was crude and relatively ineffective at helping Americans ward off the spread of communicable illnesses.[42] Early nineteenth-century physicians focused on the role "the atmosphere" played in transmitting disease and emphasized that clean air and the elimination of foul odors were the best means for preventing the spread of illness. In this framework hygienists and physicians thought that there were inanimate toxins located in the atmosphere and in filth, which caused the spread of illness and disease.[43] Under these assumptions physicians reasoned that the best way for the public to maintain good health was by living in a dry well ventilated home, avoiding the ill, and fostering concern for ones diet, temperance, and proper rest.[44] Of course the poor did not fair well in this understanding of disease because their living and working conditions made it almost impossible to maintain the domestic standards of cleanliness and order easily established by the middle class.

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[42] Nancy Tomes, "The Private Side of Public Health: Sanitary Science, Domestic Hygiene, and Germ Theory" *Bulletin of the History of Medicine* Winter 1990, 64:4, pp. 509.
[43] Ibid., pp. 509.
[44] Ibid., pp. 509.

Beginning as early as the 1870's, however, advancements within physiology, bacteriology, and epidemiology gave hygienists new insights into the cause of communicable diseases, allowing them to expand and alter the atmospheric theory of infection. The germ theory of infectious disease emerged during this period and was born out of improved techniques in growing bacteria cultures, the use of aniline dyes to distinguish bacteria, and the adoption of illuminating instruments to more clearly view microbes thought to cause disease.[45] In 1876, the biologist T.J. MacIagan published, "The Germ Theory: Applied to the Explanation of the Phenomena of Disease: The Specific Fevers" which provided for the first time a coherent account of germ theory and gave a name to the work biologists had begun to develop as early as the 1840's.[46] With germ theory, infectious diseases were thought to originate from living micro-organisms. It was held that unique germs spawned diseases. Germ theory brought about a new paradigm for understanding the origin and spread of infectious diseases. When germ theory was paired with the refined instruments of bacteriology and the methodological improvements of clinical trail research, public health experts obtained more empirical information about the incubation of disease, its mode of transmission, the length of time a germ could survive outside the body, how immunity was possible, as well as where germs resided when not expressed in an outbreak.[47] Answers to these questions made germ theory a powerful new tool for preventing the spread of infectious diseases.

[45] Howard D. Kramer, "The Germ Theory and the Early Public Health Program in the United States" *Bulletin for the History of Medicine*, 1948, Vol. 22, pp. 240.
[46] Nancy Krieger, *Epidemiology and the People's Health: Theory and Context* (Oxford: Oxford University Press, 2011), pp. 97-99.
[47] Ibid., pp. 99-110.

As Nancy Krieger has noted, physicians used two easily understandable metaphors to convey germ theory and its implications to lay audiences.[48] The first of these metaphors was the concept "seed and soil" which expressed the idea that widespread exposure to a disease germ not need necessarily result in a widespread epidemic. Variations within the health and immunity of a population, as well as the life of the germ itself, factored significantly into why only some individuals became sick during an epidemic. This metaphor captured a common truth of growing crops, where the development of a seed into a plant was contingent on the condition of the seed and the hospitality of the soil.

But there was also a dark side to the life of germs as inevitably the life of the infected host was in jeopardy. To convey the antagonistic relationship between life and disease germs, physicians drew from the warlike metaphors of evolutionary theory, stressing how bacteria and micro-organisms were the "mortal enemies of men" and their elimination was a matter of the survival of the fittest.[49] Armed with these two metaphors public health researchers and sanitarians helped bring about in the minds of the lay public a new understanding of disease as a living, variable and antagonistic part of human life which could be controlled and in some cases made innocuous under the right sanitary conditions.

When germ theory began to reframe the way physicians understood the cause of infectious disease it also yielded a greater understanding of the systemic physical effects of sexual diseases such syphilis and gonorrhea, as well as the threat these maladies posed to the American family. As the medical historian Allan Brandt argued, progress within

[48] Ibid., pp. 100-102.
[49] Ibid., pp. 100-101.

medical science in the last decades of the nineteenth-century brought about "a virtual redefinition of venereal disease from the classic 'carnal scourge' to 'family poison,' a redefinition that would illuminate the relationship of science, morals, and disease in the new century."[50] American physicians interested in the spread of venereal disease saw themselves as the stewards of both the health of the individual as well as the family. This shift in thinking had started as early as 1854 when the French venereal researchers Paul Diday and Alfred Fournier discovered that mothers infected with syphilis passed the disease on to their children and was responsible for newborn deformities such as blindness.[51] Fournier went on to discover "congenital syphilis" in which healthy children of syphilitic parents could suffer effects many years after birth.[52] Research into the systemic effects of venereal disease in the next few decades only heightened physicians' concerns about the deleterious effects of syphilis and gonorrhea. In 1859 Rudolf Virchow discovered that syphilis could be transferred through the blood to the internal organs.[53] The American physician Emil Noeggerath revised long held notions that the asymptomatic periods of gonorrhea infections in women and men rendered the disease innocuous. In 1872 Noeggerath discovered that asymptomatic men could still transfer the disease to women, which explained why so many young women manifested the disease soon after marriage. Noeggerath also discovered gonorrhea was a source of sterility in women.[54] Around 1876 physicians found that syphilis was the cause of cardiovascular ailments and was responsible for muscle in-coordination and paralysis if the infection

[50] Allan M. Brandt, *No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880* (New York: Oxford University Press, 1987) pp. 9.
[51] Ibid., pp. 10-11.
[52] Ibid., pp. 11.
[53] Ibid., pp. 10.
[54] Ibid., pp. 11.

spread to the spinal cord. If it reached the brain syphilis also caused insanity.[55] By 1879 germ theory helped the German dermatologists Albert Neisser identify the gonococcus as the organism responsible for gonorrhea infections. Follow up studies to Neisser's work found that the unique gonorrhea bacteria he identified could also cause arthritis, meningitis, the heart condition pericarditis, and peritonitis.[56] Then at the start of the new century August Wasserman and his colleagues in 1906 made use of a chemical reaction (later called the Wasserman reaction) to detect the syphilitic bacteria spirochete from a sample of blood.[57] Unfortunately increased knowledge of the venereal disease did not readily translate into improved diagnostics or treatment. Many physicians lacked the laboratory space and technical facilities to conduct the Wasserman reaction and other proper diagnostics.[58] Moreover, therapy for both syphilis and gonorrhea remained crude and often deleterious to the health of the patient until the introduction of sulfa drug treatments in the late 1930s.[59]

Although germ theory provided a powerful new lens from which to view the cause of infectious disease, its ascension into a conventional scientific paradigm took place during a climate where racial minorities did not fare well within scientific and popular associations between race, evolution, and illness. We will see below how the notion that some individuals contracted infectious diseases and not others, along with the idea that death from communicable disease was a natural part of human evolution, were echoed within turn of the century social scientific studies that claimed blacks were dying from a host of illnesses at a higher rate than whites and would soon be a diseased riddled

[55] Ibid., pp. 9.
[56] Ibid., pp. 10.
[57] Ibid., pp. 40.
[58] Ibid., pp. 40.
[59] Ibid., pp. 12.

race, or worse extinct. The racial implications of germ theory were quite profound as it allowed public health researchers to look to the ancestry of a population—indeed the soil of out which their racial traits emerged—to explain health disparities across racial groups.

The Transformation of Venereal Disease into a Racial Disposition

The United States first devoted federal resources to the task of fighting the spread of venereal disease in 1918, when President Woodrow Wilson made the U.S. Public Health Service (PHS) a part of the military just three days before America entered WWI.[60] In 1912 Congress voted to transform the Marine Hospital Service—which was previously responsible for caring for sick and disabled servicemen, conducting medical inspections of immigrants and helping state and local governments enforce quarantine regulations—into the US Public Health service.[61] The PHS was given the power to disseminate public health information, conduct research into the cause and spread of disease, and also to regulate the pollution of the nation's lakes and waterways.[62] Physicians associated with the PHS also conducted medical inspections of Asian, Jews, along with Southern and Eastern European immigrants into the country in order to determine who was healthy and who might harbor visible or hidden disease.[63] The growth of its purview eventually included the Service's transformation into the National

[60] Ronald Hamowy, *Government and Public Health in America* (Northampton: Edward Elgar Press, 2007), pp. 28-29.
[61] Ibid., pp. 28.
[62] Ibid., pp. 28.
[63] Susan M. Reverby, *Examining Tuskegee: The Infamous Syphilis Study and Its Legacy* (Chapel Hill: The University of North Carolina Press, 2009), pp. 22.

Institutes of Health in 1930.[64] Physicians and public health experts from across the country were summoned to join the US Public Health Service in its effort to prevent the spread of infectious diseases.

President Wilson was concerned that poor sanitation conditions within military camps and major industrial centers supporting military production could contribute to the spread of disease and compromise the health of US forces.[65] Working with the military, the PHS became responsible for supervising local sewage and water supplies, as well as vaccinating the public against typhoid and smallpox—particularly in areas surrounding military camps.[66] Of its many tasks, the Service spent considerable effort educating military men about the hazards of sexually transmitted diseases.[67] Between 1917 and 1919 military officials reported substantial economic losses due to the number of service men taken off active duty after contracting venereal diseases.[68] Thus controlling sexually transmitted diseases was as much about the health of serviceman as it was the economic ramifications of the illness, along with the health and defense of the nation more generally. Getting at the source of the problem was crucial. The Public Health Service understood prostitution as a social vice largely responsible for the contraction and spread of venereal disease and therefore lobbied state legislatures to prohibit the sex trade.[69] As a result of this pressure 40 states eventually passed 96 laws attempting to limit prostitution and regulate the prevalence of venereal disease.[70] Then in 1918, Congress provided even more authority to the US Public Health service with the Chamberlian-

[64] Hamowy, *Government and Public Health in America*, pp. 364-365.
[65] Brandt, *No Magic Bullet*, pp. 57; Hamowy, *Government and Public Health in America*, pp. 29
[66] Hamowy, *Government and Public Health in America*, pp. 29.
[67] Ibid., pp. 29.
[68] Brandt, *No Magic Bullet*, pp. 115.
[69] Hamowy, *Government and Public Health in America*, pp. 29.
[70] Ibid., pp. 29.

Kahn Act that established an Interdepartmental Social Hygiene Board to research the cause and spread of venereal disease.[71] Under the act all instances of venereal disease both within and outside of the service had to be reported to the local health authorities with criminal consequences for physicians who failed to do so. Moreover, the Chamberlian-Kahn Act gave State Boards of Health the power to control the travel and mobility of victims of venereal infections in order to prevent the spread of the disease. The Chamberlain-Khan act also gave the Public Health Service the resources to establish clinics to diagnose and treat the infected. Lastly, the act gave the Public Health Service the authority to administer grants-in-aid to the states to help subsidize their efforts at controlling the spread of venereal diseases.[72] This was the first use of federal aid to the states for health purposes.[73]

Even before the US Public Health Service made venereal disease a national health priority, Christian organizations such as the YMCA and the YWCA were already involved in the fight against sexually transmitted diseases and had launched social hygiene programs aimed predominantly toward white sectors of society at the end of the nineteenth-century.[74] These campaigns grew out of the Social Gospel movement and involved a national call for reforming deviant social practices and defunct political and economic institutions that had taken their toll on the moral life and physical health of working and middle class Americans.[75] Among these Christian organizations, venereal disease did not carry the connotations of a race specific affliction. Rather these diseases

[71] Ibid., pp. 29.
[72] Ibid., pp. 29.
[73] Ibid., pp. 29.
[74] Amy Laura Hall, *Conceiving Parenthood: American Protestantism and the Spirit of Reproduction* (Michigan: Eerdmans Press, 2008), 231-237.
[75] Ibid., 231-237.

were seen as consequences of moral weakness and products of poor public health education. As Amy Laura Hall has detailed, Christian organizations such as the YMCA and the YWCA championed the cause of protecting the American family against these immoral diseases with public lectures led by Protestant and lay leaders on proper sexual conduct and Christian values.[76] This campaign also involved advertising directed toward women within popular domestic magazines and newspapers. Through these efforts Protestant values became enmeshed in new ways with organized civic aspirations for improved physical, moral and behavioral health of white American citizens.[77]

By 1913 a collaboration of prominent Protestant leaders and leading public health experts formed the American Social Health Association (ASHA) to educate the American public about the benefits of medical science and the imperative of proper moral practice to prevent the spread of disease.[78] In this partnership between religion and modern medicine, social hygienists continued to affirm that prophylaxis needed to be paired with sound moral decisions. In other words, morality remained at the heart of social hygiene reform. As Christina Simmons has argued, the ASHA was but a more systematic and medical version of early attempts of Christian organizations to take on the cause of promoting social hygiene during the social purity movement of the nineteenth-century.[79]

By the start of WWI social scientific surveys gave credibility to the idea that African Americans were biologically predisposed to sexually transmitted diseases and suffered from illnesses such as syphilis at rates significantly higher than those expressed by whites. In its campaign against venereal disease the US Public Health Service took a

[76] Ibid., pp. 231-237.
[77] Ibid., pp. 230.
[78] Ibid., pp. 231-233,
[79] Christina Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40" *Journal of the History of Sexuality*, July 1993, 4:1, pp. 53.

particular interest in African American military men because they appeared to suffer from the disease at higher rates than white soldiers. The PHS partnered with the ASHA during the period leading to US's entry into WWI.[80] African American soldiers formed one-tenth of the military forces and with the start of the War there were growing concerns by military officials that the contributions of black soldiers would be diminished by their high rates of venereal disease.[81] In this regard the PHS's assumptions about the high prevalence of syphilis among blacks was a reflection of the times. As the historian Susan Reverby has explained, the PHS's best men "were not immune from the prevailing cultural and scientific assumptions that shaped beliefs about race and disease."[82] Even though the PHS looked to lower the rate of venereal disease among blacks, many of the white physicians believed African Americans had a biological disposition toward these illnesses. Reverby marks this vision of race and disease to the medical training of PHS physicians as "leaders in the Venereal Disease Division went to medical school at a time when eugenic understandings of race were central to their education."[83] Reverby's crucially important work *Examining Tuskegee* goes on to show that the PHS's assumptions about black biology having a natural disposition toward venereal diseases was a driving ideological force behind the experimentations conducted on black men in and around Tuskegee, Alabama in the 1930's.

The seeds for this conflation of race, biology, and venereal disease were sowed at the end of the nineteenth-century. One of the most influential statistical studies of African American health that led to distorted perceptions about the "natural" prevalence of

[80] Ibid., pp. 58.
[81] Ibid., pp. 57.
[82] Reverby, *Examining Tuskegee*, pp. 22.
[83] Ibid., pp. 22.

venereal disease among blacks was the 1896 publication, *Race Traits and the American Negro*, written by the German born insurance statistician Frederick L. Hoffman. *Race Traits* was nothing short of a social-scientific treatise demonstrating that subsequent to emancipation blacks throughout the nation were degenerating as a race. They were thought to experience high rates of infant mortality, suffer from greater illnesses than other races, and have shortest life expectancy in the country. Hoffman made his case by researching and quantifying state and military medical records on the health of African Americans since the time of the Civil War. Of the many afflictions African Americans faced Hoffman seemed particularly interested in what appeared to be the extraordinary number of black men and women, as well as "mulatto" children, suffering from the effects of venereal diseases. Hoffman reported that out of a total of 22,053 white patients in treatment at the hospitals of the Freedman's Bureau, the diseases affected only 379 whites. By comparison, 10,887 "colored" patients were treated for venereal conditions out of a total of 430,466.[84] Hoffman also reported that the number of deaths from scrofula and venereal diseases in Alabama between the years of 1890 and 1894 sat at 66 for whites compared to 249 for blacks.[85] According to Hoffman, the disparity between the number of whites and blacks that contracted venereal disease also held true in the north. In Baltimore and Washington D.C. Hoffman found that between 1885 and 1890 six whites died from venereal diseases compared to twenty-four blacks for every 100,000 persons.[86] Hoffman concluded that comparable disparity in black-white deaths from venereal disease in Baltimore, Washington D.C., Charleston and Alabama made "plain

[84] Frederick L. Hoffmann, *Race Traits and Tendencies of the American Negro* (New York: MacMillan Company, 1896), pp. 94.
[85] Ibid., pp. 93.
[86] Ibid., pp. 94.

the fact that the prevalence of these two diseases and the consequent mortality have greatly increased since the war."[87] Hoffman was clear to point out, however, "it can not be consistently argued that because the mortality from these diseases is small, the facts brought out therefore, are of less significance than those for consumption."[88] At this time death from tuberculosis—also referred to as consumption during this period—was also a major health problem for African Americans. Despite the low number of deaths from venereal disease Hoffman insisted upon the statistical significance of these figures. He postulated that since "the disease is closely related to other diseases, principally consumption, and an excessive infant mortality, that the rapid increase of scrofula and venereal disease among the freed people becomes a matter of the greatest social and economical importance."[89] In other words, venereal diseases were often associated with other common illness and thus collectively they had devastating implications for entire generations of African Americans. This, according to Hoffman, warranted national consideration. At base he believed that the increasingly poor health of African Americans would shift race relations in favor of whites who, on the whole, appeared to be more robust and resistant to communicable diseases as African Americans were "dying out."

Hoffman's "scientific" explanation for the excessive incidence of death from venereal disease among blacks reflects a tripartite conflation of biological determinism, disease and morality. Hoffman reasoned that:

> The root of the evil [of black decline] lies in the fact of an immense amount of immorality, which is a race trait, and of which scrofula, syphilis, and even consumption are the inevitable consequences [...] It is not in the *conditions of life*, but in the *race traits and tendencies* that we find the causes of the excessive mortality. So long as these tendencies are persisted in, so long as immorality and

[87] Ibid., pp. 94.
[88] Ibid., pp. 94.
[89] Ibid., pp. 94-95.

> vice are a habit of life of the vast majority of the colored population, the effect will be to increase the mortality by hereditary transmission of weak constitutions, and to lower still further the rate of natural increase, until the births fall below the deaths, and gradual extinction results.[90]

Hoffman rejected the idea that the environment could account for the differences in the death rates between blacks and whites from venereal disease. Rather, the uniqueness of blacks and the inheritance of racial traits and dispositions were seen as causes for the contemporary differences between individuals with African and European ancestry. This line of reasoning was caught in a reinforcing tautology that made any notion of common human ancestry irrelevant for understanding the source of this health disparity. In this post-Darwinian polygenist framework the biological constitution of the American Negro was dependant upon his innate moral dispositions, which in turn were an expression of the racial traits thought to be unique to his/her African ancestry. These traits were inherited and the diseases they manifested were believed to have occurred independent of environmental influences. Thus the conclusion was obvious: blacks were destined to perish under the weight of their own unique ancestral tendencies and inferior biological constitutions.

Hoffman claimed that his study had the backing of statistical science and his German born status also helped guarantee that his perceptions of the "Negro problem" were objective and free from the racial prejudice that compromised the work of other American researchers on this question.[91] This claim to objectivity was typical of turn of the century social scientists that increasingly relied upon statistical analysis as a resource for gaining insight into the causes of the nations most pressing social problems. Hoffman's study received the prestigious backing of the American Economic

[90] Ibid., pp. 95.
[91] Ibid., pp. v.

Association.[92] Almost over night *Race Traits* made Hoffman one of the country's premier experts on the health and life expectancy of the American Negro. His studies were widely cited by physicians, social scientists, politicians, and proslavery apologists. Perhaps most importantly, his ideas were understandable to the general public and were on the minds of laymen well into the twentieth-century.[93]

Contemporary historians of this period have written that the impact of Hoffman's *Race Traits* upon medical scientists, physicians, and social scientists in the US was tantamount to the cultural and political impact of *Uncle Tom's Cabin* before the Civil War.[94] Hoffman's tripartite conflation of biology, disease, and morality continued to reverberate in the thought of early twentieth-century medical thinkers with many of whom were increasingly of the opinion expressed by Thomas Murrell in the *Journal of the American Medical Association* that, "another fifty years will find an unsyphilitic negro a freak, unless some such procedure as vaccination comes to the relief of the race." Ultimately it was believed that "the spread of venereal disease is dependant, to some extent, at least, on the moral status of the race."[95]

The medical community was actually divided on whether or not the poor health of the Negro was tied to the unique biological ancestry of blacks or was a consequence of deprived social and environmental conditions that could be changed through sanitary and moral education. Some public health researchers understood the deteriorating conditions of black health to be an expression of their poor biological constitutions and African

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[92] George M. Frederickson, *The Black Image in the White Mind: The Debate on Afro-American Character and Destiny, 1817-1914* (Middletown: Wesleyan University Press, 1987), pp. 249.
[93] Frederickson, *The Black Image in the White Mind*, pp. 249-250; Baker, *From Savage to Negro*, pp. 79.
[94] Frederickson, *The Black Image in the White Mind*, pp. 249.
[95] Thomas W. Murrell, "Syphilis and the Negro" *Journal of the American Medical Association* March 12, 1910, 34:11, pp. 847.

origins. In fact by the early twentieth-century it was not uncommon for white medical societies, particularly in the South, to openly claim that the African ancestry of black Americans was the direct cause of their poor health, low intelligence, and immoral behavior. All three of these racial traits were thought to pose a threat to white Americans as the plight of black Americans during the start of the twentieth-century had been famously coined "The Negro Problem."

For example, on February 20, 1900 in Charleston, South Carolina Dr. Paul Barringer, Chairman of the Medical Faulty of the University of Virginia delivered an address before the Tri-State Medical Association of Virginia and the Carolinas, entitled "The American Negro, His Past and Future"[96] Barringer had been asked by the Secretary of the Tri-State Medical Society to offer reflections on what the *raison d'etre* for this new Southern medical society should be. Barringer's response was that the Tri-State Medical Society, which was a consortium of physicians, dentists and other medical practitioners, should hold a series of meetings on the "Negro Problem" facing the South as this would prove to be the most important issue for the nation heading into the twentieth-century.[97] His suggestion was well received and Barringer's address spearheaded a debate on the influence of heredity as the cause of the Negro problem among medical practitioners within the Society. Although several papers were delivered throughout the course of the February 20th meeting, Barringer's address was only one of two essays that gained the unanimous vote of the Tri-State Medical Association that it should be printed and sent to all medical societies in the South.[98]

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[96] Paul Barringer, *The American Negro: His Past and Future* (Raleigh: Edwards and Broughton, 1900), pp. 3.
[97] Ibid., pp. 2.
[98] Ibid., pp. 2.

Much of Barringer's essay reflected the rhetoric of proslavery apologists and Southern paternalism typical of writers that championed the "Negro Degeneracy" myth.[99] Like Hoffman and other social Darwinists Barringer insisted that the underlying causes behind the degenerate health and behavior of Southern blacks were the racial traits unique to their African origins. Barringer drew from the adage coined by the social Darwinist, Ernst Haeckel (1834-1919) that, "sociological problems are in most cases biological problems"[100] and the Negro problem is best summarized by the "short, crisp biological axiom, which reads 'the ontogeny is the repetition of the phylogeny.' "[101] According to this axiom, living organism advanced through the same stages of development as all other previous members of the same species. In Barringer's terms this could be "freely interpreted [as] the life history of any individual, of any type, unless modified by forces of an exceptional character, will tend to conform to the lines of ancestral traits."[102] According to this line of reasoning, the descendants of Africa who inherited the racial traits of their ancestors were inevitably doomed to relive and act out the dispositions, behaviors, and health problems that were a permanent part of the phylogenic history of the race—unless they happened to be spared by the gift of "exceptional character." This meant that the prospect of improving the Negro's situation was truly a matter of chance, as social forces could not easily alter the biological forces responsible for black's poor health—if at all. As Barringer addressed his audience he made it clear that:

> The question for us to-day then, and the question of questions for the South, is, 'What is the cause of the change and what can be done to remedy the evil?' The

[99] Frederickson, *The Black Image in the White Mind*, pp. 256-258
[100] Barringer, *The American Negro*, pp. 3.
[101] Ibid., pp. 3.
[102] Ibid., pp. 3.

> first thing is to seek out the truth, however unpalatable it may be, and in my opinion it is very simple. The young negro of the South, except where descended from parents of exceptional character and worth, is reverting through heredity forces to savagery. Fifty centuries of savagery in the blood can not be held down by two centuries of forced good behavior if the controlling influences which held down his savagery are withdrawn as they have been in this case. The language and forms of civilization may be maintained, buy the savage nature remains.[103]

And what were the racial traits that marked "the Negro's" regression? Barringer cited increased tendencies toward crime, preference for squalid social conditions[104], "no self-control" "absence of sustained will-power" complete inability to "resist his impulses" "cruelty" and proclivity for the raping of white women unheard of during the time of slavery.[105] Concerning the latter Barringer believed that the "degenerating Negro" possessed "a sexual development, both anatomical and physiological, unapproached except among the lower animals."[106] Like Hoffman, Barringer singled out the sexuality of black males as a unique threat to the overall health and safety of the nation.

However, not all medical men were of the opinion that the health and sanitary conditions of blacks were hopelessly lost causes. Conceding many of the paternalist caricatures of blacks as a wayward race that suffered disproportionately from high rates of disease and mortality, certain medical men argued that inferior sanitary conditions, overcrowding, and a general ignorance about social hygiene caused black's poor health. These were all social conditions that could be changed if whites marshaled the appropriate political will. Some of the country's leading medical health experts conveyed these opinions in a special issue of the *American Journal of Public Health* published in

[103] Ibid., pp. 15.
[104] Ibid., pp. 16.
[105] Ibid., pp. 8.
[106] Ibid., pp. 8.

1915 specifically on the so-called "Negro Problem."[107] For example William F. Brunner, a public health official working in Savannah, Georgia, made it very clear that although "the negro is here for all time" he nonetheless "depends upon the white man for everything that makes up civilization." He is "what the white man makes him."[108] The health of black Americans was seen as a part of the "white man's" burden, as it were. But the alleviation of this weight, according to Brunner, involved making sure that the black to white ratio in any given city did not exceed "2 to 5."[109] Brunner claimed that Blacks lived in such poor sanitary conditions that if their numbers exceeded

> [this] percentage, his progress is retarded and, in a community where he greatly outnumbers the white population, he goes ahead not at all and furnishes a low morality and a high mortality. The cities of Wilmington, N.C., Charleston, S.C., Savannah, Ga., and Jacksonville, Fla., have an excess of negroes over whites and therefore, each one of these cities is on sanitary parity with the other.[110]

Improving the sanitary conditions of blacks was the other component to alleviating the white man's burden when it came to the health of African Americans. Brunner added that:

> Few people know of the conditions that now exist in certain parts of Savannah, and, unless the city authorities take hold of this matter these abuses will continue for this class of property pays enormous returns for the money invested. Here, children are filthy; sleep in filthy houses; eat filthy food and your attention is called to the mortality of children under ten years of age. There were 123 deaths among such white children and 330 deaths among negro children. The negro adult population also shows the result of bad sanitary conditions, the worst of which is overcrowding. There are 5,000 or more negroes in this city who are parasites and their removal would lower the death-rate and reduce crime.[111]

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[107] Each of the articles detailed below were read before the General Sessions of the American Public Health Association meeting which took place in Jacksonville, Fla., November 30- December 4, 1914. They were subsequently published in the March 1915 issue of the American Journal of Public Health.
[108] William F. Brunner, "The Negro Health Problem in Southern Cities" *American Journal of Public Health* March 1915, 5:3, pp. 183.
[109] Ibid., pp. 184
[110] Ibid., pp. 184.
[111] Ibid., pp. 185.

For Brunner African Americans were not dying from disease because of their inferior biological constitutions but because of their poor living environments.

In the same issue 1915 issue of the *American Journal of Public Health*, the physician L.C. Allen, practicing out of Hoschton, Georgia argued that nothing short of a revolution in the education of blacks would actually improve their health, as "proper ideas of cleanliness, sobriety, chastity, honor, and self-reliance should be instilled into his mind."[112] Allen went on to say that "the physician should be consulted, and his expert knowledge made use of, in the education of the Negro race." He emphasized, "an education that does not teach cleanliness and the proper care of the body is a defective education."[113] But an education in sanitary hygiene also entailed education in proper sexual conduct. In the same 1915 issue, the physician Lawrence Lee claimed that venereal diseases appeared to be the underlying cause of many of the illnesses blacks were afflicted with. Lee found that in his care for African Americans:

> Venereal diseases are present in over 50 per cent of those presenting themselves for treatment. Syphilis has as much to do with the high death-rate in the negro as any other single factor. It does not show on the death certificate, but as a complication of bronchitis, pneumonia and tuberculosis, it reduces the chance of a successful fight against these diseases and as a cause of arterio sclerosis, endocarditis, cerebral hemorrhage, nephritis and still-births it seems to be ever present.[114]

Venereal disease appeared to be everywhere and nowhere, an illness that systematically ravished the immune system of African Americans leaving them susceptible to a host of other illnesses.

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[112] L.C. Allen, "The Negro Health Problem" *American Journal of Public Health* March 1915, 5:3 pp. 200.
[113] Ibid., pp. 200.
[114] Lawrence Lee, "The Negro as a Problem in Public Health Charity" *American Journal of Public Health* March 1915, 5:3, pp. 207.

But Lee was not alone in his concern about the threat that the high rate of venereal diseases and other illnesses posed both to blacks and whites. Allen wrote that:

> Now syphilis and gonorrhea are very common among [blacks]. In fact very few Negroes escape one of the other of these disease. Many Negro women have gonorrhea, and pay little attention to it. This is a very real menace to our white boys, and through them, after marriage, to our innocent daughter also. For, despite our best efforts, many boys are going to sow wild oats.[115]

He also added:

> Disease germs are the most democratic creatures in the world; they know no distinction of 'race, color, or previous condition of servitude.' The white race and the black race will continue to live side by side in the South, and whatever injuriously affects the health of one race is deleterious to the other also. Disease among the Negroes is a danger to the entire population.[116]

For Allen, disease germs were "democratic creatures" that left all populations—despite apparent racial differences—equally susceptible to their malevolent influence. Diseases were free to cross the color line. Therefore, ideas about races having different levels of susceptibility to contracting communicable illnesses were out of touch with how diseases were actually disseminated across populations. Equally vulnerable biology was equal biology all the same. Acknowledging that the races shared the same susceptibility to disease germs implied, however, that the perpetuation of poor living conditions known to invite sickness among blacks also put whites at risk. Contrary to Hoffman's predictions it was not the case that whites would emerge unscathed as blacks gradually died off from illnesses and disease. As with their shared origins, the biological destinies of both races in the U.S. were interlinked. This was a point that Brunner seemed to grasp, as he argued that whites

[115] L.C. Allen, "The Negro Health Problem", pp. 196.
[116] Ibid., pp. 194.

> Are faced with the evidence of our neglect to safeguard the white race by disinclination to recognize the Negro as a potent factor in the transmission of disease. If you continue to allow him to be herded in the basements of houses and to be colonized in crowed districts, you will suffer. The Negro is thrown into domestic contact with you and he furnishes 80 percent of your house help. You cannot keep pace with modern sanitation unless you care for him.[117]

The rationale here was quite simple: the poorer the health of African Americans the larger the threat they posed to the nation.

Thus we can see that the even among these medical men who understood the social and environmental factors sabotaging the health of African Americans, at the heart of the so-called "Negro Problem" was a concern for the health of whites. This assessment of the social factors shaping the health of blacks involved a strange mixture of sympathy, self-serving benevolence, and fear about the threat that their poor health posed to white America. As the germ theory metaphors of "conflict" and "seed and soil" implied, fighting the spread of communicable disease was a matter of evolutionary survival and the chances that whites would become a victim of disease increased exponentially so long as they came into regular contact with blacks who lived in unsanitary conditions and engaged in sexual behavior known to invite and spread life debilitating illnesses.

In the face of the disagreement over the cause of communicable diseases among blacks, Hoffman's claims that venereal diseases were a natural racial trait of the American "Negro" gained even more power among American medical scientists and laypeople when the US Surgeon General's report for 1918 claimed that black soldiers suffered from venereal disease at a rate that was 2.8 times higher than white soldiers.[118] Given the highly subjective nature of diagnosing venereal diseases at the time of the First

[117] Brunner, "The Negro Health Problem in Southern Cities", pp. 189.
[118] Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40" pp. 57.

World War, it is unclear whether these statistics were accurate.[119] What is known, however, was that unlike whites, black men with venereal disease were accepted into military service because military doctors assumed that all blacks had a biological predisposition for sexually transmitted diseases.[120] This assumption and corresponding recruitment practice likely increased the proportion of black soldiers with venereal illnesses compared to whites. In other words, assumptions about black biology directly contributed to the over-reporting of black men with venereal disease.

Thus we can identify three major factors that contributed to the transformation of venereal disease into a racial trait: inaccurate social scientific studies that made African ancestry the source of venereal disease among blacks, assumptions about the role venereal disease played in other common illnesses black's suffered from more frequently than whites, and finally racist views about the moral fortitude of blacks and their ability to resist dangerous sexual activity. The convergence of these three ideas about black public health helped turn venereal disease into a racial trait that reinforced white's concerns that blacks were a conduit of disease and posed a threat to the nation.

In its attempt to fight the spread of venereal disease among African Americans both within and outside the military, the ASHA and the US Public Health Service developed public health programs at historically black colleges and African American communities in order to educate blacks about the virtues and larger social significance of sanitary health for the nation.[121] As we will see with the work of Charles Roman, there were social reformers involved with the ASHA and the US Public Health service that

[119] Brandt, *No Magic Bullet*, pp. 13.
[120] Ibid., pp. 116.
[121] Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40", pp. 57; Reverby, *Examining Tuskegee*, pp. 19.

claimed that the spread of disease was not a matter of race-specific biological inheritance. Rather it was contingent upon social and economic factors that if properly understood could be eliminated through public health interventions, education, and moral reform.

Charles V. Roman the Physician

Dr. Charles Victor Roman was arguably one of the most influential African-American medical practitioners, public health reformers and ethicists of the early twentieth-century. Roman was born on July 4, 1864 in Williamsport, Pennsylvania. At the age of ten Roman and his family moved to Ontario Canada where he was educated at the all-white Hamilton Collegiate Institution.[122] Roman was the first African American to graduate from Hamilton and excelled in his studies, completing a four-year study course a year early.[123] When Roman first returned to the US in February 1889 he worked as an office assistant to Robert F. Boyd, a physician and professor at Meharry Medical College in Nashville, Tennessee and founder of Mercy Hospital, Nashville.[124] At this time Mercy was the largest hospital in the South to be owned and managed by African Americans.[125] In 1887 Roman enrolled into a 3-year medical program at Meharry Medical College.[126] After completing his degree in 1890 he pursued additional studies at the Post-Graduate Medical School and Hospital of Chicago, then attended the Royal Ophthalmic Hospital and Central London Ear, Nose and Throat Hospital in England.[127] After returning to the

[122] Linda C. Chandler, "C.V. Roman, Leader Worthy of His Namesake" *Dallas Medical Journal*, December 1994, pp. 499.
[123] Charles V. Roman, *Meharry Medical College: A History*, (Nashville: Sunday School Publishing Board of the National Baptist Convention, Inc., 1934).
[124] Roman, *Meharry Medical College: A History*, pp. 51; Sheena M. Morrison and Elizabeth Fee, "Charles V. Roman: Physician, Writer, Educator," *American Journal of Public Health* 2010,Vol. 100, S1, pp. S69.
[125] Ibid., pp. S69.
[126] Roman, *Meharry Medical College: A History*, pp. 45.
[127] Sheena M. Morrison and Elizabeth Fee, "Charles V. Roman: Physician, Writer, Educator," pp. S69.

US from his post-doctorate studies Roman opened his first medical practice in Dallas, Texas.[128] In October of 1904 Roman returned to Nashville where he helped to found and chair the Department of Ophthalmology and Otolaryngology at Meharry Medical College. Roman went on to serve as professor of medical history and ethics from 1904 to 1931.[129]

At the beginning of his term as chair of the Department of Ophthalmology and Otolaryngology at Meharry, Roman was appointed president of the National Medical Association (NMA) in 1903.[130] Originally called the National Association of Colored Physicians, Dentists, and Pharmacists, the NMA was founded in 1895 by a consortium of the country's leading African American physicians and medical students after they were denied entry into the American Medical Association (est. 1847). Under a segregated health care system African American medical professionals were systematically denied access to local and national medical societies across the country. During the Cotton States and International Exposition in Atlanta, Georgia in the fall of 1895—the site where Booker T. Washington delivered his famous "Atlanta Compromise" speech—Dr. Boyd of MeHarry Medical College and Dr. Miles V. Lynk, editor the *Medical and Surgical Observer* called for a meeting of black physicians attending the conference.[131] With African Americans possessing no public space to organize under Jim Crow, a total of twelve prominent physicians met at the First Congressional Church in Atlanta. That meeting yielded the formation of The National Association of Colored Physicians,

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[128] Sheena M. Morrison and Elizabeth Fee, "Charles V. Roman: Physician, Writer, Educator," pp. S69.
[129] Charles V. Roman, "Constitution and By-Laws of the National Medical Association" Journal of the National Medical Association, July 1953,Vol. 45, No. 4, pp. 301.
[130] "C.V. Roman, Leader Worthy of His Namesake" in Dallas Medical Journal, December 1994, pp. 499.
[131] Karen Morris, *The Founding of the National Medical Association*, Unpublished Doctoral Thesis, Yale University School of Medicine, 2007, pp. 74.

Dentists, and Pharmacists, which in 1903 was renamed the National Medical Association.[132] The NMA was founded to promote the professional development and national collaborations of African American physicians and other medical practitioners while also addressing the larger health issues facing African Americans more broadly. The NMA made it a mandate to tackle illness such as Hookworm, Tuberculosis, and Pellagra.[133] Moreover, the NMA was one of the leading African American professional associations lobbying for universal health care beginning at the turn of the twentieth-century.[134] Roman, who was a member of the NMA while studying at Meharry was given the task of writing its mission statement, declaring the association was:

> Conceived in no spirit of racial exclusiveness, fostering no ethnic antagonism, but born of the exigencies of the American environment, the National Medical Association has for its object the banding together for mutual cooperation and helpfulness, the men and women of African descent who are legally and honorably engaged in the practice of the cognate professions of medicine, surgery, pharmacy and dentistry.[135]

Indeed Roman took seriously the important social obligations that African American physicians bore when he claimed in an 1908 address on medical ethics to the Rock City Academy of Medicine and Surgery that:

> The real mission of medicine is to benefit mankind by healing the sick and preventing disease, not the enrichment of its votaries. The true physician gathers his emoluments because he deserves them, not because he seeks them. His rewards follow as a consequence of duty done. His right thereto is based upon the highest ideal of civilization-the triple extract of ethics, religion and common-sense.[136]

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[132] Ibid., pp. 74.
[133] Ibid., pp. 75.
[134] History of the NMA, http://www.nmanet.org/index.php/nma_sub/history accessed on April 12, 2012.
[135] Ibid.
[136] Charles V. Roman, "The Deontological Orientation of its Membership and the Chief Function of a Medical Society" *Journal of the National Medical Association*, 1909, No.1, Vol.1, pp. 20.

By the start of the new century the mainstream American economy was increasingly organized around mass production, corporate influence, and monopolistic capitalism.[137] In this context impersonal and machinelike workforce techniques became the hallmarks of American efficiency.[138] The American health care system avoided these forms of social and economic organization, stressing instead the primacy of the individual, the autonomy and unique craft of the physician, and the importance of the doctor-patient relationship.[139] Roman and the members of the NMA were strong advocates of viewing the delivery of healthcare as the moral application of scientific knowledge and the fullest expression of one's duty as a democratic citizen. Although Roman's tenure as president of the NMA was short lived, he went on to be the first editor of the Journal of the National Medical Association between 1908 and 1918.

Roman's Environmental Account of Disease

In 1919, the year after Roman stepped down as editor of the JNMA, he was recruited by the U.S. Public Health Service to discuss social hygiene in African American communities.[140] During that year alone, Roman reportedly lectured to over 22,500 blacks in the South. But this was not the first time Roman publicly advocated for hygiene reform and preventive social medicine. Since the time of his medical studies Roman seemed to be preparing for a career as a public advocate of social hygiene. While at Meharry Medical College Roman wrote his graduating thesis on preventative medicine, commonly

[137] Byrd and Clayton, *The American Dilemma*, pp. 37.
[138] Ibid., pp. 37.
[139] Ibid., pp. 37.
[140] Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40", pp. 58.

referred to at the time as "Prophylaxis."[141] Roman also wrote regularly about the benefits of proper social hygiene in the fight against communicable disease as the editor of the JNMA. Roman honed his skills as an orator, Christian ethicist, and critic of racial prejudice while leading a layman's bible class at St. Paul A.M.E. Church in Nashville beginning in 1904.[142] Roman's "layman discourses" were widely popular among Nashville residents, and were regularly attended by the faculty and student body of Meharry Medical College.[143] Roman's sermons discussed the moral and political challenges facing African Americans and the importance of fostering cultural and social awareness among blacks—referred to at the time as "race psychology"—in the struggle for equity. In fact Roman's "discourses" were so well received that they occasionally replaced the Sunday sermon.[144] As early as 1917 Roman was lecturing to students at historically black colleges about how improved public sanitation and advancements in medical science were tools for young physicians and medical practitioners in the fight to advance the health of African Americans.[145]

Throughout his writings and public lectures on race and social hygiene Roman articulated a vision of medical science and its relationship to race and social reform that would likely appear unorthodox to many present-day readers given the secular approach of contemporary medical practitioners to these very same issues. Even though the early twentieth-century was a period where contemporary medical science underwent a process of secularization—developing professional, institutional and conceptual autonomy from

[141] Roman, *Meharry Medical College: A History* pp. 45.
[142] Roman, *Meharry Medical College: A History*, pp. 204-206.
[143] Ibid., pp. 205.
[144] Ibid., pp. 205.
[145] Charles V. Roman, "Fifty Years' Progress of the American Negro in Health and Sanitation: Delivered at Semi-Centennial at Howard University" *Journal of the National Medical Association* 1917, April-June Vol. 9, No. 2.

other areas of society—medical practitioners and social hygienists like Charles V. Roman and others involved in the ASHA continued to disseminate knowledge about disease, sexuality, and race to lay audiences while making explicit appeals to Christian concepts and values. We will see that the key to Roman's understanding of race and disease was his insistence that theories of innate biological dispositions ultimately overshadowed the relevance of common racial ancestry for thinking about human's shared biological susceptibility to all diseases. The Christian narrative of common human descent and the theological notion that all races were the creations of God provided Roman with an ethical framework for rejecting ideas about "race specific" dispositions and traits. If humans were created equally before God this implied that all racial groups shared the same biological dispositions and were equally fit. With this as a guiding premise, Roman accounted for the apparent differences in the races using an environmentalist argument, claiming that species change was driven by the effect of external forces on the human form, rather than an innate essence that was impervious to the environment.

Thus religion, science and medicine worked together within Roman's thinking about race, the human body and illness. Reflecting on the moral and religious dimension of medical science and its purpose within society, Roman wrote that:

> The doctor, like the apostle, 'Though he walk in the flesh, wars not after the flesh' (II. Cor. 10:3). St. Paul's warning to Timothy (I Tim. 1:13) that those who put away faith and a good conscience made shipwreck, is as applicable to medicine as to religion. In fact, true medicine is largely a matter of pure morals. In their last analysis as in their first genesis, the duties of the physician and the priest are similar if not identical. 'Pure religion and undefiled before God and the father,' as defined by St. James (James 1:27) applies equally to both. Viewed in this light, there is no higher nor holier exercise for the faculties of man than the practice of medicine. What then is plainer than the necessity for thorough preparation for this

calling?[146]

To fully grasp Roman as a social hygienist, physician, and critic of racializing science one must take seriously the extent to which religion and morality informed his understanding of the social-economic determinants of health and the proper place of medicine within society.

In fact religious forms of reasoning often helped Roman frame the importance of social hygiene reform to his lay audience. That is, it was not uncommon for Roman to make explicit appeals to religious notions such as the soul or biblical scripture in an effort to describe the source and consequences of public health problems. In a lecture delivered at Howard University on March 2, 1917 regarding the progress made in the health and sanitation conditions of African Americans Roman claimed that:

> Health problems begin with the souls and not with the bodies of men. Sanitation is but a reflex of cerebration, and hygiene is a matter of appetite and instinct, impulse and conduct. Health is to be measured in terms of psychology rather than in terms of physiology. What a man thinks is more fateful than what he eats […] A man has a body, but is a soul. Physical condition is made or marred by psychical and social conditions. The key to the mortality table is to be found in the educational, economical and political situation. Progress in sanitation and health is a reciprocal factor of progress in liberty, virtue and intelligence. No modern discovery has abrogated [this] moral law.[147]

Roman's intentions were to give an account of the improvements and continued obstacles to positive African American health conditions while also refuting longstanding myths about the inferiority of black biology represented in the statistical studies of Frederick Hoffman at the turn of the twentieth-century.[148] Roman argued that Hoffman's work

[146] Charles Roman, "A College Education is a Requisite Preparation for the Study of Medicine" *Journal of the National Medical Negro Association* 1917, January—March, Vol. 9, No.1 pp. 7.
[147] Roman, "Fifty Years' Progress of the American Negro in Health and Sanitation", pp. 61.
[148] Ibid., pp. 65.

fomented the politics of racial prejudice and distorted perceptions of black health within American medicine. As Roman saw it:

> Race prejudice has cast its baneful shadow athwart the pathway of medical science and chromotopsia has characterized the vision of medical men. The responsiveness of medicine to outside influences has materially enhanced the Negro death-rate. Vital statistics are interpreted in terms of ethnography and mortality returns are taken as a measure of racial fitness; pathology has become the handmaid of prejudice and the laboratory a weapon of civic oppression.[149]

Racial prejudice in medicine made it difficult to see how health and hygiene were determined not by innate biological or physical dispositions but by the souls, psychological well-being and moral fortitude of human beings. These factors shape the habits, instincts and impulses that lead to good health and when poorly managed are also responsible for high mortality. For Roman improvements in public health involved changes to the inner life of the human being, his or her moral dispositions, and to their socio-economic conditions.

In this same lecture Roman went on to explain further how the inner life of a population is tied to sound health:

> Health problems, I repeat, begin with the souls and not with the bodies of men. The undoing of Babylon was that the souls of men were bartered in her market place (Rev. 18:3). Freedom and health are intimately and inseparably related. Segregation is the partner of disease and the enemy of sanitation. Honor and long life are companions. The key to infant mortality is to be found in adult *morality*.[150]

With this biblical illusion Roman makes an analogy between Babylon and the US under Jim Crow. As with Babylon, Roman saw that immoral social conditions led to high rates of disease and shortened life expectancy. Roman here is drawing upon religious forms of reasoning to make his case that the economic and political injustices of Jim Crow were

[149] Ibid., pp. 66.
[150] Ibid., pp. 62.

directly responsible for the poor health of African Americans—not their innate biological constitutions. The adult morality under question for Roman was that of white America as well as the social practices of African Americans. Roman claimed that:

> American mortuary returns reveal no lethal diseases peculiar to the colored people. Tuberculosis of the lungs, the various forms of pneumonia, organic heart disease and infant mortality constitute the major part of our excessive death-rate. These are all diseases of crowd and stress. Intemperance and late hours, insufficient food and rest, bad housing and immorality are powerful factors in their production and deadliness. Many of these factors are measurably within our control.[151]

In Roman's eyes, diseases commonly associated with African Americans are caused by poor social, economic, and moral conditions. There was no such thing as race specific afflictions derived from inferior biology, only social problems that could be changed through improvements within public hygiene and the socio-economic setting of a population. With this logic Roman reasoned that communicable illnesses such as venereal disease were also health problems that were social rather than biological in nature. In other words, the elimination of venereal disease among blacks could be solved through reforms within sexual education and the steadfast commitment of blacks to moral sexual practices.

For example, in 1918 Roman delivered a series of speeches to African American soldiers stationed in Camp Grant, located in Rockford, Illinois and Camp Stewart near Savannah Georgia.[152] In these lectures Roman sought to persuade black soldiers that continence, moral integrity and proper medical diagnosis and treatment were the three most effective means of preventing the spread of venereal disease. In the opening of these

[151] Ibid., pp. 66.
[152] Charles V. Roman, "Syllabus of Lecture to Colored Soldiers at Camps Grant, Stewart, Hill and Humphreys" *Journal of the National Medical Association* 1918, April-June, Vol. 10, No. 3, pp. 104.

speeches Roman likened the contraction of venereal disease to Nature's punishment for immoral sexual acts. Roman explained:

> Nature gives us the privilege of choosing our course but reserves the right to pay or punish according to our conduct. Nature has set her stand of disapproval on sexual promiscuity by fixing venereal diseases as a penalty for prostitution. A thing is good or bad according to the way it is used. The sexual impulse is one of the greatest influences that ever came into a man's life. Rule it and it will bless you, let it rule you and it will curse you, and the generations to follow you. The sexual act has but two purposes or places in an honorable life. It is a generative act and an expression of love. Sexual congress is the creator's high seal of approval upon the marriage vow. Sexual congress between people who do not love each other is brutal passion degrading human reason. Nature has made no provision for prostitution. Gonorrhea and syphilis are but expressions of her disgust.[153]

Weaving together an image of Nature as a retributive force and appealing to the inherent value of Christian marriage, Roman presented the etiology of venereal disease not simply in medical-scientific terms but also within an explicitly Christian moral framework. The message is clear: black men are to harmonize their sexual practices with the moral laws embedded in Nature or else there will be consequences for both the individual transgressor and his offspring. Roman warned:

> A man that would willfully put out the eye of an innocent baby is the meanest of criminals. Yet that is what a man does who takes clap to the marriage bed. If there is any Hell, I think the hottest place in it ought to be reserved for the man who willfully spreads venereal disease. A man with no respect for a pure woman is not fit to live. I believe I am right when I think you want to be good soldiers and good men, that you want to defend your country and protect your mothers, wives, sweethearts and children.[154]

Roman's emphasis on having "respect for a pure woman" and the duty of the black soldier to be "good men" that protect their "country" "mothers, wives" and "children", is an early example of the overlapping message social hygienists conveyed to black and white audiences on how prudent and will-informed sexual choices improve the

[153] Ibid., pp. 106.
[154] Ibid., pp.106.

"fitness" of a population and potentially that of the nation.[155] In this framework the love of one's country meant more than a willingness to take up arms in its defense; it also meant the defense of sexual good hygiene. Thus at stake in the sexual practices of these black soldiers in particular, and black men in general, was the "fitness" of the race as a whole and ultimately the contributions of blacks to "American civilization." Roman was emphatic on this point, explaining:

> Soldiers of the U.S.A., members of the colored race! I would not mislead you. Your Country has called you to do a great work. The colored soldier has never failed to give a good account of himself—from the 'Numidian Horse of the Roman Legions to the 10th Cavalry of the U.S. Army […] You have been chosen for your fitness. Won't you make good?[156]

So it was that the "fitness" of the race was determined not by their inherent ancestral traits but by the proper use of prophylaxis and the moral decisions made by black men.

It is clear that Roman's understanding of the social determinants of health and the fallacy of race specific illnesses, particularly venereal disease, reflected a historical and environmentalist account of human difference shared by many other African American advocates on social hygiene during this period. Indeed, an environmentalist account of race reverberated among leading social hygienists in the 1920s such as Dr. Roscoe C. Brown, who was also recruited by the U.S. Public Health Service, Franklin O. Nichols, director of the Southern Regional Office of the National Urban League and hired by the ASHA, as well as Arthur B. Spingarn, the Jewish director of the NAACP hired by the U.S. Army to work with African Americans.[157] As Christina Simmons noted all three of

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[155] Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40", pp. 58.
[156] Roman, "Syllabus of Lecture to Colored Soldiers at Camps Grant, Stewart, Hill and Humphreys" pp. 107-108.
[157] Simmons, "African Americans and Sexual Victorianism in the Social Hygiene Movement, 1910-40", pp. 63.

these social hygienists claimed that high rates of venereal disease and other illnesses among African Americans could be explained as the effects of history, the environment and class.[158] They argued that the legacy of slavery wreaked havoc on the communal support structures of black family life leaving African Americans more exposed to sexual and communicable diseases. This vulnerability was exacerbated by the politics of racial prejudice as prostitution was allowed to flourish by local police in parts of US cities populated by African Americans. Poor funding and lack of resources for black public schools effectively robbed them of extra institutional support structures capable of facilitating moral values and other important social skills. Black women had little support from law in instances of sexual assault or when abandoned by their husbands. Roman, along with Brown, Nichols, and Spingarn argued that these social, political, and economic factors greatly shaped the health and hygiene of African Americans.[159] They were adamant that the contraction and spread of venereal disease could not be understood without giving attention to these marked effects of slavery and racism. According to Roman these social and moral determinants of health could easily be eclipsed by medical men, anthropologists and politicians who bought stock in theories of biological determinism that attributed high rates of infant mortality and disease among blacks to their African ancestry. Roman wrote:

> The greatest difficulties confronting us from a sanitary and hygienic stand point arise not from the physiological weakness of the colored man but from the psychological strength of the white man. The white man's immunity to fact is a more destructive force than the colored man's susceptibility to disease.[160]

[158] Ibid., pp. 63-67.
[159] Ibid., pp. 63.
[160] Roman, "Fifty Years' Progress of the American Negro in Health and Sanitation", pp. 62.

Roman understood how the links made by whites between racial ancestry and disease was a major factor in the misperception of blacks as a biologically unfit population where social conditions were occluded from considerations about blacks' vulnerability to disease and hopes for health.

Roman the Monogenist

What was unique about Roman's ability to recognize the social-economic factors of public health was that his environmentalist position stemmed from an explicit monogenist conception of human origins, leading him to see the shared and transitory nature of so-called racial traits. Roman's clearest account of the significance of common human descent appeared in his major work, *American Civilization and the Negro: The Afro-American in Relation to National Progress*.[161] Therein, Roman provided a systematic critique of scientific racism and the politics of racial discrimination in the U.S., both of which he saw as clear obstacles to improving the life chances of African Americans and their contribution to American democracy. Published in 1921 and over 400 pages, this work offers a view of the breadth and complexity of Roman's thinking on medical and scientific racism, the living legacy of slavery within the US, the importance of morality for the progress of civilization, and the promise of American democracy. Roman believed that:

> The differences in mankind are the differences between charcoal and diamond—differences of condition and not of composition. Quartefages is right: there is but one species of man. St Paul is right: men are of one blood. Religion and science agree in prescribing the same treatment for all—intelligence, mercy and justice. All races are capable of the same virtues and susceptible to the same vices.[162]

[161] Roman, *American Civilization and the Negro: The Afro-American in Relation to National Progress* (Philadelphia: F.A. Davis Company Publishers, 1921).
[162] Ibid., pp. 3.

The timing of its publication coincides with Roman's work as an advocate of social hygiene and thus offers a deeper understanding of the philosophical assumptions that stood behind his environmentalist conception of race and disease.

Roman's discussion of race within *American Civilization* begins with a ethnological definition of mankind, citing all of the physiological traits common to our species and observed by naturalists since the earliest attempts to distinguish human life from other living creatures. Roman possessed an impressive command of the history of natural philosophy and ethnology drawing from the work of Linnaeus, Blumenbach, Cuvier, Haeckel, Huxley, Quatrefages, and Boas.[163] For Roman this literature made it clear that, "a careful scrutiny of the data of anthropology […] will show that nature has not separated her human children by impenetrable walls. Racial differences are not innate and permanent; but are superficial, environmental, and transitory."[164] Racial differences in Roman's mind were fleeting and human varieties were not distinct but blended into one another. Roman wrote that:

> Humanity passes with facility from one variety to another, as it does from one class to another. From whatever angle we approach, scientific investigation forces us to the conclusion that the only just way to measure men, either physically, mentally or morally, is to measure them individually. Society is measured by the individual; the development of the individual man is the model of social progress.[165]

Roman acknowledged his environmentalist conception of race and his critique of distinct human races stood within the tradition of thought represented by Blumenbach. In his argument against the notion of pure races Roman wrote:

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[163] Ibid., pp. 9-21.
[164] Ibid., pp. 322.
[165] Ibid., pp. 321.

> Blumenbach, true founder of scientific anthropology, has summed up the whole question from the physical standpoint in words that have lost nothing of their force since they were penned a hundred years ago. He asks whether everywhere in time or place mankind has constituted one and the same, or clearly distinct species; and he concludes: 'Although between distant people the difference may seem so great that one may easily take the inhabitants of the Cape of Good Hope, the Greenlanders, and Circassians for peoples of so many different distinct species, nevertheless we shall find, on due reflection, that all, as it were, so merge into the other, the human varieties passing gradually from one another, that we shall scarcely if at all be able to determine any limits between them.'"[166]

From this Roman drew the conclusion that, "there is black blood in the whites as assuredly as there is white blood in the blacks."[167] It was also equally clear to Roman that, "there is but one species of man. These propositions are so established that no one with any just pretense to a scientific education would attempt to dispute them."[168]

Of course Roman was well aware that there were early twentieth-century men of science who in denying the common origins of mankind and the effect that the environment had on the human form, "sought assiduously for scientific justification of the tenets of racial inequality."[169] Roman explained "we have reached a stage of scientific knowledge when evolution is accepted as 'an elementary truth at the foundation of a rational conception of the universe.' Yet wild theories of emotional ethnology still persist among us." Roman thought that those who continued to champion pre-Darwinian theories of racial distinction "lack[ed] neither ingenuity nor industry" but that these persistent theories of "emotional ethnology" continued to thrive because of practitioners' cultural beliefs in racial hierarchy. Roman explained:

> They now admit all […] propositions [of common descent], claiming however, that while there is but one human family, nature has favorite children, that she has written the decree of favoritism in the tissues of their bodies. In other words, they

[166] Ibid., pp. 323-324.
[167] Ibid., pp. 324.
[168] Ibid., pp. 321.
[169] Ibid., pp. 322.

> concede the Negro's theoretical rights as a man, but deny his capabilities as a citizen. They claim the artifice of man is built upon the necessity of nature.[170]

Roman here was spelling out the logic of post-Darwinian polygenism: there are behavioral and health consequences to inferior racial heredity that overshadow any notion of common human descent and insofar as politics ought to mirror the intentions of Nature, not all populations ought to be treated equally under the law.

Of course for Roman it was precisely the fact of our shared human ancestry that the "permanent characteristics of mankind are common to all varieties; and the differences that characterize the varieties are transitory."[171] If the traits that distinguish the races were shared across the color line and proven to be ephemeral then there were no grounds to treat racial differences *as though they were fixed* or claim these differences had behavioral and health implications. There was also no biological evidence to deny the citizenship of certain populations on the basis of their ancestry. For Roman belief in common descent and that all humans share the same range of physical and behavioral traits had direct health implications for the entire nation: all races are equally disposed to the same diseases and illness. Roman wrote:

> The most insidious and destructive diseases of civilized life show no racial predilection. Gonorrhea, and syphilis, opium, alcohol and cocaine, respect no racial lines. The high and increasing mortality of middle life from Bright's disease, apoplexy and heart disease is a national not a race problem.[172]

Roman's commitment to monogenism and the notion that all races share the same traits provided the foundation for his critique of efforts to draw associations between ancestry and disease.

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[170] Ibid., pp. 321-322.
[171] Ibid., pp. 327.
[172] Roman, "Fifty Years' Progress of the American Negro in Health and Sanitation", pp. 67.

Interestingly, of all the traits shared by mankind Roman noted that none were more significant than morality and religion. Roman, using Quatrefages as his guide, explained that:

> Man has his own attributes—faculties that belong exclusively to him—morality and religion […] It is these [faculties] that ennoble him, and justify the incontestable empire that he claims over the globe; for it is these which, along with the sentiment of punishment, give birth to the idea of duty, the thought of responsibility.[173]

For Roman, humans create their social world through the use of reason. But religion and morality allow humans to improve and maintain the institutions and practices of this social world, ennobling human life and giving "birth to the idea of duty" and responsibility that was crucial to modern civilization. The key idea here is that through morality and religion mankind shapes a social world that then acts back upon human life at a biological and moral level. Roman saw that:

> Man in a measure creates his own environment. This in turn reacts upon those subject to it. The moral causes, such as liberty which people enjoy, the consideration of which they are assured, and the wholesome sentiment of equality before the law and the respect of human dignity, the instruction which is given them, national system of taxation which contributes to their comfort, the facility of internal and external communications, the way in which the State exercises its privileges and monopolies, justice which respects all the legitimate aspirations of citizens, and as many other conditions of a healthy development of a country, have all likewise their counter-effect on the physiological formation of human beings.[174]

For Roman, the problem with rigid theories of racial biological inheritance was that this view of human diversity failed to take seriously the capacity of humans to create their own environment and the effects that social institutions and moral practices had upon the body, health, and behavior of a population. Jim-Crow had direct biological implications for the lives of African Americans. According to Roman, the life of the physician, was as

[173] Roman, *American Civilization*, pp. 19.
[174] Ibid., pp. 342-343.

much concerned with the physical health of a population as it was with the moral, socio-political, and economic factors shaping patient's lives. From this perspective a public health intervention such as medical science education and sexual hygiene reform could improve the lot of a population because humans by nature were malleable—as was evident from their descent from a shared ancestor—and the life chances of a population were not determined solely by their ancestry or biological heredity.

Conclusion

It is clear that at the beginning of the twentieth-century American social scientists and medical practitioners believed that each race possessed different susceptibilities to venereal disease. This assumption became part of a medical-scientific discourse that associated unique racial ancestry with higher rates of illness. American public health researchers effectively brought back to life the logic of nineteenth-century polygenism, by drawing connections between distinct biological pedigree and inherited racial dispositions. The shared heredity of the races (monogenesis) was virtually irrelevant for early twentieth-century public health researchers—such as Frederick Hoffman and Paul Barringer—who were convinced blacks possessed an innate disposition to contract venereal disease. In effect, a common illness was transformed into a racialized disorder.

From a monogenist and environmentalist perceptive, however, the connection between racial ancestry and venereal disease was rife with contradictions as whites were also capable of contracting the very same maladies as blacks. For the social hygenist, Charles V. Roman, monogenism provided a conceptual anchor for his critique of scientific racism, allowing him to decouple false correlations between black ancestry and

communicable disease. By taking seriously the common descent of all racial groups, he turned to the environment to explain the disparities in health that existed across the color line. Social hygienists committed to this liberal view of race understood that human health and behavior changed in relation to the cultural, political, and economic history of a population. With this logic, the living legacy of slavery and the immediate effects of Jim Crow directly shaped the health of African Americans. In other words, corrigible socio-political institutions were the cause of high rates of disease among blacks, not innate biological dispositions stemming from unique racial ancestry. With common descent in full view an ever-broadening understanding of the environment became the key to explaining perceived differences between so-called racial groups.

Charles V. Roman's involvement in the social hygiene movement shows us how during WWI the critique of racial traits and fixed racial dispositions was implicitly a defense of monogenism, a notion bequeathed to modern secular science by Christianity. Roman was a medical thinker who believed that science and religion could share a productive relationship within public discourse. Roman's vision of the social determinants of health gives us a window onto the ethical implications that were carried along by the idea of common descent. Monogenism was a moral concept by virtue of its ties to Christian thought. But it was also a scientific idea that compelled thinkers to develop more sophisticated accounts of why humans varied while sharing a common ancestor. Roman's use of the story of Babylon, for example, was a powerful metaphor for conveying how public health problems involved more than just the human body but also the moral standing of people within a social environment that made health possible. Roman's work also shows how the Christian valences of monogenism and the moral

implications that followed could be effectively integrated into the conceptual framework of modern medical thinkers without jeopardizing the scientific validity or authority of their observations. In the eyes of the U.S. Public Health service, Roman's open endorsement of Christian ideas did not compromise his legitimacy as a medical practitioner devoted to public health reform. Indeed, Roman's marriage of Christian moral values with public health reform was a precursor to Civil Rights era activists who saw that medicine and morality were necessary counterparts in the struggle for equal life chances for all racial groups in the United States.

Roman therefore stands in the legacy of scientific thinkers such as Johann Friedrich Blumenbach and Charles Darwin who were invested in keeping the conceptual legacy of common human origins alive. Roman did this by making a case for how monogenism could be preserved through a more nuanced understanding of the effects of the environment on the human form. Ultimately, Roman's work shows how the conflict between monogenism and polygenism continued despite the Darwinian revolution. This conflict raged on well into the early twentieth-century in the guise of public health service efforts to eradicate communicable diseases that disproportionately affected African Americans.

Chapter 4

Noah's Lost Son: Neanderthal Admixture, Race, and Society

Introduction

On June 2, 1857, Joahann Carl Fuhlrott, a gymnasium schoolteacher in Elberfeld, Germany, and Herman Schaaffhausen, a professor of anatomy at the University of Bonn, presented to the Natural History Society of Prussian Rhineland and Westphalia what appeared to be the remains of an ancient human race.[1] The fossils, which included about half of the bone structure of a complete body, were found by accident the year before by workers at the Kleine Feldhofer Grotte in the Neander Valley near Düsseldorf, Germany. On the day of their fortuitous discovery, September 4, 1856, canyon workers had presented the remains to Fuhlrott, assuming they belonged to an ancient cave bear—an increasingly common find by quarry workers in Germany and other parts of Europe. Fuhlrott, an amateur but well-known fossil collector, saw that the prominent brow ridges and narrow skullcap were too humanlike to belong to an ancient animal. This was true despite the fact that the thickness and weight of this creature's massive femur bones were unlike any he had seen in modern humans. With a human-like bone structure whose antiquity appeared obvious given the extent of mineralization that had collected on the fossils and the depth at which the remains were found, Fuhlrott immediately concluded that the quarry workers had actually discovered the remains of an ancient human type. Word of Fuhlrott's discovery spread quickly to Herman Schaaffhausen. Eventually the two met and Schaaffhausen corroborated Fuhlrott's claim that indeed an ancestral human had been discovered in the Neander Valley. Their collaborative presentation of the

[1] Friedemann Schrenk and Stephanie Muller, *The Neanderthals* (New York: Routledge, 2009), pp. 1.

worlds first "Neanderthal" in June 1857 prompted a furious debate across Europe and America about the origins of modern humans and the biological links that humans might have with ancestral hominids buried deep below the earth's surface.

In May of 2010, almost a century and a half later, the Neanderthal Genome Project (NGP) announced a discovery that shed new light on human ties to our hominid ancestors, the Neanderthals. Hidden within the 6 billion base pairs that make up the modern human genome, the Neanderthal Genome Project identified potential regions within "the human genome reference sequence" (a collection of all known human genes covering 99% of the human genome) where Neanderthals and humans are thought to have mixed, through interbreeding.[2] To corroborate their theory, Neanderthal DNA was compared with human DNA from five individuals who hailed from Africa, Asia, Europe and the South Pacific, and who in most people's minds represent continental racial types. Specifically, they compared two individuals from China, one from France, one from Papua New Guinea, one from South Africa, and one from West Africa with each other and with the Neanderthal. The project discovered that Asians and Europeans were genetically closer to the Neanderthal than Africans with an estimated 1-4% of their genome containing Neanderthal DNA.[3] Thus 153 years after Fuhlrott and Schaaffhausen, scientists now claim to have verified the actual biological links between humans and Neanderthals. Although all contemporary humans did not equally share the genetic legacy of the Neanderthal, the line between our closest extinct relatives and us proved more porous than had been expected.

[2] Richard Green et al, "A Draft Sequence of the Neanderthal Genome" *Science*, May 7, 2010, Vol. 328 pp. 717.
[3] Ibid., pp. 721.

The Problem: Recurring Visions of Race

Until recently the assumed decline of scientific theories of race have been explained according to the following narrative.[4] Race emerged as a coherent scientific concept during the nineteenth-century, where scientists assumed all humans could be reduced into three or more basic racial groups or typologies. This way of approaching race was indebted to the classification systems of post-Enlightenment figures, such as Johann Friedrich Blumenbach during the late eighteenth-century. Biological conceptions of race eventually fell into disfavor during the first two decades of the twentieth-century. This was due in large part to the pioneering work of the Jewish born, German anthropologist Franz Boas and the African American sociologist W.E.B. Du Bois. Boas in his two most noteworthy works, *The Mind of Primitive Man* (1911) and *Changes in Bodily Forms of Descendants of Immigrants* (1912) severed the link between race, language, and culture, which was a fundamental premise of racializing evolutionary theories and Social Darwinism.[5] By separating biology from culture, he called into question the scientific validity of race by arguing that Westerners lack the ability to objectively evaluate the cultural life, and by extension evolutionary development, of other social groups. The value of each culture had to be taken on its own terms, as there were no grounds for sorting humans into a "natural" hierarchy. Boas also disputed the widely accepted notion of fixed and heritable racial traits by collecting ethnographic data

[4] Recently Jenny Reardon has challenged claims about the emergence of a "paradigm shift" in modern scientific theories of race and the eventual decline of scientific racism, arguing instead that the concept race was far from being universally rejected by scientists over the course of the twentieth century and has in fact been steadily retooled within the life sciences since the UNESCO Statements on Race following WWII. See, Jenny Reardon, *Race to the Finish: Identity and Governance in an Age of Genomics* (Princeton: Princeton University Press, 2005), pp. 17-44. The narrative of decline I describe below follows her analysis and the work of Elazar Barkan, *The Retreat of Scientific Racism* (Cambridge: Cambridge University Press, 1992).

[5] John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism and Science: Social Impact and Interaction* (New Brunswick: Rutgers University Press, 2006), pp. 130-137.

demonstrating that the bodily forms of immigrant groups—specifically their skull measurements—varied as a result of the environment and other social factors.

Although working in the field of sociology, Du Bois made a similar attempt to decouple the link between race, culture, and biology. In his work *The Philadelphia Negro* (1896) and *An Essay Toward an Anthropology of a Race Concept* (1943) Du Bois confronted the scientific racism that rested behind the views of Social Darwinists in the U.S. and abroad. Du Bois argued that economic and social factors, not innate biological deficiencies, were responsible for the poor health and dire social conditions of African Americans. Moreover, Du Bois, much like Boas, argued that it was illegitimate to use the cultural forms of a social group as a proxy for determining their biological worth or evolutionary progress.[6] According to the decline of scientific racism narrative, Boas and Du Bois helped precipitate a paradigm shift in the way scientists visualized the perception of race, ultimately opened to door for more robust critiques of racial determinism and the use of race as tool of scientific analysis during the remainder of the twentieth-century.

Eventually the development of population genetics through the work of R.A. Fisher, J.B.S. Haldane, Sewall Wright, and Theodosius Dobzhansky in the 1920s and 1930s helped to further complicate the notion of fixed racial types.[7] These early pioneers of population genetics synthesized the Mendelian theory of genetic inheritance with the

[6] Lee Baker, *From Savage to Negro: Anthropology and the Construction of Race, 1896-1954* (Berkeley: UC Press, 1998), pp. 110.
[7] Elazar Barkan, *The Retreat of Scientific Racism* (Cambridge: Cambridge University Press, 1992); John P. Jackson Jr. and Nadine M. Weidman, *Race, Racism and Science: Social Impact and Interaction* (New Brunswick: Rutgers University Press, 2006), pp. 153-159; Audrey Smedley, *Race in North America: Origin and Evolution of a Worldview* (Boulder: Westview Press, 1999), pp. 303-310.

Darwinian view of evolution through natural selection. [8] They came to see human groups as dynamic biological units or "populations" where the genetic composition of a group was believed to change as a result of the operation of various factors such as natural selection, genetic drift, mutation, geographic isolation, and migration.[9] With this vision of the human species as a porous and potentially unstable biological entity, population geneticists realized that the idea that race was something consistently passed down from one generation to the next was oversimplified and inaccurate.[10] Instead they maintained that the differences between so-called "racial" groups could be better understood in terms of the frequency and concentration of certain alleles (or genes) across a given population and geographic region.[11]

According to the story of the decline of scientific racism, the end of WWII is believed to mark another important paradigm shift in the way Western scientists conceptualized human variation.[12] In 1945 the United Nations Educational, Scientific, and Cultural Organization (UNESCO) was formed to promote international collaboration on issues dealing within peace, security, justice and human rights through education, scientific and cultural research.[13] Given the blatant role that scientific racism played in the Holocaust, UNESCO was asked in 1949 by the Economic and Social Council of the United Nations to develop a program for disseminating scientific facts designed to remove racial prejudice. UNESCO convened a committee on Experts on Race Problems,

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[8] Jonathan Marks, "Race: Past, Present, Future" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 22.
[9] Elazar Barkan, *The Retreat of Scientific Racism* (Cambridge: Cambridge University Press, 1992); Luigi Luca Cavalli-Sforza, *Genes, Peoples, and Languages* (California: University of California Press, 2001).
[10] Jonathan Marks, *Human Biodiversity: Genes, Race, and History* (New Brunswick: Transaction Press, 2009), pp. 89-92.
[11] Ibid., 22-23.
[12] Elazar Barkan, *The Retreat of Scientific Racism* (Cambridge: Cambridge University Press, 1992).
[13] Ashley Montagu, *A Statement on Race: An Extended Discussion in Plain Language of the UNESCO Statement by Experts on Race Problems* (New York: Henry Schuman, 1951).

comprised primarily of social scientists working in the field of cultural anthropology and sociology. This committee of experts drafted a statement on race; refuting the many misconceptions that race determines mental aptitude, temperament or social habits. After several revisions and reviews by a designated group of scientists in biology, genetics, social psychology, sociology and economics, the first UNESCO Statement on Race was issued on July 18th, 1950.[14]

Following the 1950 Statement on Race, objections were raised concerning the analytic value of racial concepts. Scientists also argued that the original statement lacked authority of those groups most competent to discuss the biological aspects of human variation given its authors did not include geneticists and psychical anthropologists. The recent work of Jenny Reardon has drawn attention to the significance of these objections as they reveal "scientists did not all agree that a concept of race no longer had any meaning in science. Instead, intense debates remained unresolved."[15] On June 4-8th, 1951 UNESCO invited a panel of physical anthropologists and geneticists to draft a supplementary statement representing the views of the biological sciences. This supplementary statement entitled, "Statement on the Nature of Race and Race Difference by Physical Anthropologists and Geneticists" was published in 1952 and made two important revisions to the 1950 Statement.[16] Firstly, scientists involved in the second statement challenged the claim that intellectual and emotional differences between the races did not exist.[17] The framers of the second statement continued to affirm that innate differences between human groups could in time could be demonstrated and that the

[14] Ibid.
[15] Jenny Reardon, *Race to the Finish: Identity and Governance in an Age of Genomics* (Princeton: Princeton University Press, 2005), pp. 23.
[16] Ibid., 30-31.
[17] Ibid., 30.

pursuit of this question should not be removed from the agenda of scientists solely for political correctness.[18] Secondly, they took issue with the claim that the equal treatment of human beings through the law and economic relations should depend on the assumption that all humans are biologically similar.[19] As Jenny Reardon has argued

> These two revisions to the 1950 UNESCO Statement demonstrate most physical anthropologists and geneticists believed that the way to construct a credible natural and social order in the wake of eugenics and the Holocaust was not by arguing that biological concepts of race were meaningless for understanding traits that society found meaningful (i.e., 'mental,' 'character,' and personality' traits). Rather, it was by maintaining a boundary between science and society that would enable scientists to define and use race in a manner that could not be used for any particular social end—whether it be totalitarianism or equality.[20]

The implication here is that the framers of the second statement on race believed that racial categories could still be helpful analytic tools for understanding human variation so long as they were freed of ideological influences and divorced from larger social needs. Reardon points out that this opened the door for further revisions to the race concept during the 1960s as population geneticists following the lead of Theodosius Dobzhansky attempted to define race as a dynamic subgroup within the human species.[21] In this view races were not discrete biological units but fluid natural populations that emerged in response to the pressures of natural selection.

Given the push back of physical anthropologists and population geneticists, Reardon argues that it is important not to be mislead into believing that the seemingly "non-political" conception of human difference articulated by the framers of the Second Statement on Race marked an end to the concept race within modern science.[22] Instead

[18] Ibid., pp. 30-31.
[19] Ibid., pp. 31.
[20] Ibid., pp. 31.
[21] Ibid., pp. 34-35.
[22] Ibid., pp. 23, 43

the Second Statement reveals deep disagreement among scientists over the use-value of racial classifications and the proper relationship between science, ideology, and society. Framers of the second agreed that the political uses of race by scientists should be avoided but this should not mean that scientists themselves should abandon racial categories in their own work. Again, Reardon writes that:

> Instead of rejecting the use of race as an analytic category in science, natural scientists would argue that race needed to be redefined and retooled to reflect the precision of the new science of population genetics. In adopting the ideas of and practices of this new science they did not displace race. Rather, they crafted a new concept of race defined in populationist terms. Instead of referring to static essences, population geneticists and the "new" physical anthropologists argued race should be used to refer to subgroups within a dynamic system of populations.[23]

The defenders of the first Statement on Race, however, believed that a populationist conception of race did not avoid the conceptual problems of nineteenth-century racial typological theories.[24] Thus, rather than viewing the UNESCO Statements as precipitating a paradigm shift in racial thinking Reardon argues it is better to view this moment as marking a divide between scientists on the continued use of racial categories for understanding human life.[25] This is a debate that continues even into our contemporary moment, as scientists still remain invested in contesting and defending the use of race a legitimate scientific concept.

Indeed, at the turn of this millennium the notion that races were not clearly defined populations or that there were no "genes" for race was confirmed with the complete sequencing of the human genome. Geneticists found that the surface differences

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[23] Ibid., pp. 43.
[24] Frank Livingstone, "On the Nonexistence of Human Races" *Current Anthropology* 1962, Vol. 3, No. 3, pp. 279-281.
[25] Reardon, *Race to the Finish* pp. 44.

expressed between any two "races" constitutes less than a half of a percent of our total genome.[26] This vision of human *similarity* became the recognized view of many scientists when in June of 2000 the geneticists Craig Venter, head of the private sequencing company Celera Genomics', announced publically that humans are 99.9% same.[27] With an unprecedented view of the structure of human DNA some population geneticists believed that one again the use-value of racial categories had been called into question. Many geneticists saw the phenotypic variations between so-called racial groups were truly inconsequential in light of the overwhelming amount of genetic information shared between populations who on the surface appeared different from on another. With this new vision of human similarity advocates of genomic science believed that it would be possible to provide personalized genomic medicine that would move beyond the restrictions of race and make good on the liberal democratic value of promoting the well-being of all citizens.[28]

With the sequencing of the human genome and the discovery that humans are 99.9% the same, it would seem increasingly difficult, if not impossible, for scientists to continue using race as a metric for understanding what it means to be human at a biological level. Yet, in the last decade social scientists have drawn attention to the return of racial typological thinking within the life sciences.[29] By looking at the most divergent

[26] Duana Fullwiley, "The Molecularization of Race: U.S. Health Institutions, Pharmacogentics Practice, and Public Science after the Genome" in, *Revisiting Race in a Genomic Age* ed. Koenig, Lee, Richardson (New Brunswick: Rutgers University Press, 2008), pp. 150.
[27] Craig Venter, "Statement on Decoding of Genome" *New York Times*, June 27, 2000, pp. D8.
[28] Jenny Reardon, "Race without Salvation: Beyond the Science/Society Divide in Genomic Studies of Human Diversity" in, *Revisiting Race in a Genomic Age* ed. Koenig, Lee, Richardson (New Brunswick: Rutgers University Press, 2008), pp. 304.
[29] Duana Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine" *Social Studies of Science* 2008**,** 38(5): pp. 695-735; Nadia El Haj, "The Reinscription of Race"; Jonathan Marks, "Race: Past, Present, Future", pp. 22-25; Alexandra Shields, M. Fortun, E., Hammonds et al "The Use of Race Variables in Genetics Studies of Complex Traits and the Goal of

qualities of the most geographically separated individuals, contemporary geneticists have been able to increase the likelihood of detecting differences between populations, thereby amplifying the significance of the less a half of a percent of genetic material that distinguishes human groups.[30] Specifically, scientists have sought out genetic markers called Single Nucleotide Polymorphisms (SNPs), which are variations in the DNA nucleotide base-pair pattern of A-T-G-C.[31] A SNP is thought to occur when one of theses base-pairs switches to another nucleotide. Population geneticists interested in human difference claim to have found SNPs unique to the four major continental populations (Africa, Asia, Europe, North America) from which contemporary humans have descended.[32] With regard to human origins, these SNPs have been given the technical term of an Ancestry Index Marker (AIMs) and tell researchers about the ancestral heritage of present-day populations. In this most recent form of typological thinking, geneticists are able to hypothesize the various ancestries (genetic admixture) any given individual might posses.[33] In recent years the public has increasingly grown familiar with this technology due to the popularity of various television documentaries on human genetic ancestry as well as the increased availability and affordability of direct-to-consumer DNA testing.[34]

Reducing Health Disparities: A Transdisciplinary Perspective in, *American Psychologist* 2005, 60:1, pp.104-114; Jenny Reardon, *Race to the Finish: Identity and Governance in an Age of Genomics* (Princeton: Princeton University Press, 2005).

[30] Duana Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine" pp. 701-706

[31] Ibid., 701-702.

[32] Ibid., 704-705.

[33] Ibid., pp. 701-706.

[34] Henry T. Greely, "Genetic Genealogy: Genetics Meets the Marketplace" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 215-23; Kimberly Tallbear, "Native-American-DNA.com: In Search of Native American Race and Tribe" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), 235-252.

As in the 1950s and 1960s there has been some resistance to this resurgence of racial thinking within science. Social scientists as well as genetics have pointed out that geneticists continue to cast human variation in terms of racial typologies even though the association between any given individual with an assumed ancestral past is probabilistic and far from certain. Many argue that there are other ways to define an individual's genetic make up or geographic origin. Medical anthropologist Duana Fullwiley writes that "although the language of scientists who invented this panel of AIMs is now that of 'biogeographical ancestry', the conceptual configuration of human racial typology remains intact even though, [they have] the ability to employ a larger interpretive frame when pressed […]."[35] Moreover, there appears to be no consensus among geneticists as to whether or not the SNPs thought to differentiate populations have actually played a relevant role in human evolutionary history.[36] These inconsistencies and gaps in knowledge have led both social scientists and geneticists to question the epistemology that guides the use of SNPs to discern ancestry. Some have argued that the notion there once existed four homogenous parental populations (African, Asian, European, North American) from which present day groups have descended is fundamentally non-Darwinian.[37] The implication here is that through admixture technology geneticists have inadvertently resuscitated the act of classifying individuals into to the same racial

[35] Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine", pp. 706.
[36] Deborah Bolnick, "Individual Ancestry Inference and the Reification of Race as a Biological Phenomenon" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, (New Jersey: Rutgers University Press, 2008), pp. 70-85.
[37] Kenneth M. Weiss and Jeffrey C. Long, "Non-Darwinian estimation: My ancestors, my genes' ancestors" in, *Genome Research* 2009, 19: pp 703-710.

typologies deployed by nineteenth-century naturalists and racial theorists of the twentieth-century.[38]

The discovery of gene flow between humans and Neanderthals has been aided by many of the novel scientific methods used to access and conceptualize human genetic admixture that were born out of the recent shift among genetics to give increased attention to the traits that separate populations. As concerns the Neanderthal Genome Project, I argue in this chapter that the recent discovery of Neanderthal SNPs in European and Asian populations reiterates the typological thinking employed by nineteenth-century naturalists. Just over 150 years ago early ethnologists used "racial traits" derived from human crania to first differentiate the human races according to relatively stable set of four original racial types. The racial traits found in the skull of each population were then used to discern the evolutionary link between Neanderthals and human beings. Present-day geneticists who have unlocked the secrets of the Neanderthal genome have made a very similar move. Instead of cranial traits, genetic traits (SNPs) have been used to divide humans into 3 ancestral populations in order to shore up our genetic links to the Neanderthal.

Near the end of this chapter I analyze public reactions to the Neanderthal admixture discovery in order to assess how lay audiences have understood the racial implications of NGP researchers claim that due to their Neanderthal ancestry, Asians and Europeans have biological traits not shared by Africans. This public consists of the American news media and the blog-sphere including Creationists, white supremacists and everyday science followers. In assessing the public reaction to this discovery my point is

[38] Fullwiley, "The Biologistical Construction of Race: 'Admixture' Technology and the New Genetic Medicine", pp. 698.

to show how the ostensibly value-neutral and non-political conception of race used by contemporary population geneticist continue to resonate with larger social needs about human identity. This has had the effect of reinforcing within the minds of many in the lay public that races were at some point in the past discrete groups (i.e., original types) and not simply fluid biological entities.

Evolution and Racialized Crania during the nineteenth-century Neanderthal Discovery

Following Darwin's *Origin of Species* (1859), evolutionists faced two major problems in the attempt to defend their account of human development.[39] Evolutionists first had to provide a culturally palatable and scientifically consistent explanation of how natural selection was responsible for the higher faculties thought to be exclusive in the human mind. They also had to establish a scientific case for the link between mankind and the animal world. Naturalists such as Charles Lyell and Alfred Russell Wallace tried to resolve the former issue by rearticulating the Christian view of mankind's biological uniqueness. Both were led to the conclusion that the attributes of humanity were the result of a supernatural interference within the natural laws of evolution. [40] This solution was of course unsatisfactory in the eyes of Darwin and Thomas Huxley who insisted that humans did not constitute an exception to the laws of continuous evolution from lower life forms.[41]

In fact, Huxley made one of the first attempts to offer a consistently naturalist explanation of how humans acquired their novel traits in his work *Man's Place in Nature*,

[39] Peter Bowler, *Evolution: The History of an Idea* (Berkeley: UC Press, 1989), pp. 229-230.
[40] Ibid., pp. 230.
[41] Ibid., pp. 229.

originally published in 1863. Huxley argued that based upon the shared physical characteristics between humans and the great apes—particularly the hands, feet, and skull—the human species should be properly classified in the same order as the other primates.[42] Even though there were clear morphological similarities between humans and the apes, this alone did not prove that they shared an ancestor. Huxley and other evolutionists had to show within the fossil record that there existed a hominid antecedent to the present humans with characteristics approaching that of the ape more than modern humans. Naturalists believed that the modern human form was a recent evolutionary creation, but the ancestor shared between humans and primates was assumed to have the primitive features still expressed by the great apes. To search for the missing link between the great apes and humans evolutionists turned their attention to the human-like fossil remains found in the Neander Valley by Fuhlrott and Hermann Schaaffhausen, as well as the fossils discovered in Engis Belgium in the early 1830s. It was thought that the Neanderthal would shore up an evolutionary understanding of human development up from the animal world.

The Neanderthal, however, appeared much closer to modern humans than not. Indeed the anatomical studies of the Neanderthal by Franz Josef Carl Mayer in 1856 and George Busk 1861 led many naturalists to conclude that the Neanderthal crania more closely resembled the traits of the so-called savage races such as the "Mongolians" and Australian aboriginals than the crania of the great apes.[43] Following his own comparative analysis of human and Neanderthal skulls from Engis and the Neander valley, Huxley wrote that:

[42] Ibid., pp. 230-231.
[43] Schrenk and Muller, *The Neanderthals*, pp. 6-7.

> Although in the lower races of men now upon earth, and in the skeleton found in the cavern in the Neanderthal, the human characters vary a little in some particulars in a pithecoid direction, the extent of this variation is very slight indeed when compared with the whole difference which separates them; and it may be safely affirmed that there is at present no evidence of any transitional form or intermediate link between man and the next succeeding form in the vertebrate scale.[44]

In fact, so similar was the skull of the Neanderthal to present-day humans that Mayer claimed that the remains found in the Neanderthal valley belonged to that of horse riding Cossack who had fought against Napoleon during the wars of liberation in1813-1814.[45]

The similarity between Neanderthals and humans made it difficult to divide both populations into separate species. For those in favor of evolution, the Neanderthal skull was too similar to existing racial types to be posited as the "missing link" between mankind the animal world (i.e. apes). For those opposed to evolution, the similarity of the Neanderthal to modern human types, specifically "Mongolians" and "Australian aboriginals", confirmed that this humanoid belonged to one of the existing races with its unique traits interpreted as pathological deformities.[46]

Ultimately, the Neanderthal did not turn out to be the missing link between humans and the great apes that evolutionist had hoped for. The subsequent Neanderthal remains unearthed in the Belgian La Nualette Cave in 1866 and near Spy in Belgium in 1886 shared features with the remains found in the Neander Valley and thus consistently approached the human form. Even the discoveries of the Cro-Magnons in the Dordogne region of France in 1868 as well as the "Java Man," discovered by Eugène Dubois in 1890 and 1892, proved to be strikingly human. In effect the "missing link" was absent from the fossil record.

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[44] Thomas Huxley, *On the Negro Question* (London: Ladies' London Emancipation Society,1864), pp. 7-8.
[45] Friedemann Schrenk and Stephanie Muller, *The Neanderthals* (New York: Routledge, 2009), pp. 6.
[46] Ibid., pp. 7.

Even though there were no concrete human remains approaching the ape form, the fossil record did show a steady improvement in the technology used by humans, evolving from primitive stone tools to the use of bronze and iron.[47] As the historian Peter Bowler has explained, in the absence of "fossil evidence for the *biological* improvement of man, evolutionists seized on the evidence for *cultural* progress as at least indirect support for their claims." In effect, "the great development of prehistoric archaeology that took place in the late nineteenth-century allowed the construction of a sequence of cultural periods that were supposed to have succeeded one another as the human race progressed. Little thought was given to the possibility that different cultures might exist side by side the in same epoch."[48] The result was that turn of the century anthropologists and prehistoric archaeologists constructed a linear model of human cultural development. This model assumed that cultural progress and technological innovations were an expression of underlying biological changes within human populations as they evolved through a predetermined hierarchy of stages. In this framework, each race was thought to develop according to its own pace, with the so-called "savage" races depicting how the "white race's ancestors lived in prehistoric times."[49] Modern "primitives" became, in effect, stand-ins for the "missing link" between animals and humans sought by evolutionists.

Thus in its earliest articulation Darwinian evolution was shaped by two contradictory influences that left Huxley and others struggling to maintain a consistently evolutionary view of human origins and development. As Bowler explains, "on the one hand, contemporary developments in cultural evolutionism seemed to imply that

[47] Peter Bowler, *Evolution: The History of an Idea* (Berkeley: UC Press, 1989), pp. 232.
[48] Ibid., pp. 232.
[49] Ibid., pp. 233.

development should be treated as a linear progress along a predetermined scale. On the other, [Darwin's] own theory treated biological evolution as an open-ended process in which each branch's history is shaped by unique factors."[50] Evolution by natural selection did not imply that human development advanced toward any particular form or set stages of cultural development. Evolutionists, however, were in a bind, as they needed to explain why humans appeared to possess unique attributes—such as the ability to make music and the capacity for reason—without succumbing to the fallacy of supernaturalism. Evolutionists believed that the attributes that made humans unique had to have been acquired gradually over time. Given the limits of the fossil record, the idea that cultural achievements reflected internal biological developments within our species allowed nineteenth-century evolutionists to argue that human culture and biology became more refined as we evolved from lower animal forms. Of course this view implied that this refinement was still taking place and therefore the so-called "primitive races" who appeared to lack complex forms of government and technological sophistication represented early stages of human evolution up from the animal world that present day Europeans had once occupied. Bowler points out, however, that this linear view of human development had the unintended consequence of casting human development "as the predestined end product of a morally purposeful system."[51] Although this was thought to be a more acceptable understanding of human development than the supernaturalism affirmed by Lyell and Wallace, this explanation was inconsistent with the view of indefinite evolutionary pathways Darwin sketched out in the *Origin of Species*.

[50] Ibid., pp. 233.
[51] Ibid., pp. 230.

This linear view of human advancement across fixed developmental stages left evolutionists with a contradictory understanding of race, which became apparent in their comparative study of human and Neanderthal crania.

Evolutionists who affirmed the unity of the races were opposed to the polygenist idea that the various races possessed traits that warranted classifying humans into separate species. Indeed, Darwin and Huxley explicitly denounced the view that the different traits of mankind were so extreme that speciation had occurred between the races. In the *Descent of Man*, Darwin claimed that those looking to rank "the races of man as distinct species" would be "much disturbed as soon as he perceived that the distinctive characters of every race of man were highly variable."[52] Darwin "doubted whether any character can be named which is distinctive of a race and is constant." For Darwin saw that "the most weight of all the arguments against treating the races of man as distinct species, is that they graduate into each other, independently in many cases, as far as we can judge, of their having intercrossed." Thus it was "hardly possible to discover clear distinctive characters between [the races]."[53] Following Darwin, Huxley in his 1863 essay "On Some Fossil Remains of Man" wrote that, "the student of anatomy is perfectly well aware that there is not a single organ of the human body the structure of which does not vary, to a greater or less extent, in different individuals."[54] Regarding the idea of race specific characters within the human skull, Huxley claimed that

> The characters of the brain vary immensely, nothing being less constant than the form and size of the cerebral hemispheres, and the richness of the convolutions upon their surface, while the most changeable structures of all in the human brain

[52] Charles Darwin, "On the Races of Man" in, *The Descent of Man and Selection in Relation to Sex* 2nd Edition, (London: Penguin Classics, 2004), pp. 202.
[53] Ibid., pp. 203.
[54] Thomas Huxley, "On Some Fossil Remains of Man" *Man's Place in Nature and Other Anthropological Essay's* (New York: D. Appleton & Company, 1896[1863]), pg. 185.

> are exactly those on which the unwise attempt has been made to base the distinctive characters of humanity, viz. the posterior cornu of the lateral ventricle, the hippocampus minor, and the degree of projection of the posterior lobe beyond the cerebellum.[55]

Thus for Huxley, the variation that humans expressed also occurred within so-called racial groups where "the majority of the structural varieties to which allusion is here made, are individual."[56] Clearly Darwin and Huxley were opposed to the notion that there were racial characteristics wholly unique to one population that warranted classifying mankind into various species.

Yet when comparing human characteristics with the traits of the Neanderthal, evolutionists were less consistent in their views of race. Evolutionists' critique of speciation did not necessarily translate into a complete refutation of the idea of distinct and heritable racial traits. In fact, knowledge of the cranial differences expressed between the races was key for the ability of naturalists to plot the Neanderthal form as belonging to one of the many stages of human development. It also helped evolutionists argue that the Neanderthal was an ancient specimen and not a modern human with gross or pathological deformities. Schaaffhausen, for instance, understood the large frontal sinuses and super-orbital ridges of the Neanderthal as "a typical race-character" and not simply the features of an aberrant "individual or pathological deformity."[57] This view was derived from comparing data gathered by ethnologists, such as the polygenist Samuel Morton, on the cranial traits of other races. Schaaffhausen claimed that it was:

> Remarkable, and important in the explanation of the [Neanderthal form] that a prominence, though in much less degree, of the supra-orbital ridges has been observed chiefly in the crania of savage races, as well as in those of great

[55] Ibid., pg. 186.
[56] Ibid., pg. 186.
[57] Hermann Schaaffhausen, "On the Crania of the Most Ancient Races of Man" trans. George Busk in, *The Natural History Review* April 1, 1861, Vol. 1, pp. 162.

> antiquity […] In Morton's works an unusual development of the [supra-orbital ridges] may be seen in the Peruvian, the Mexican, the Seminole, and in the skulls of other races, some of which were taken from ancient burial places.[58]

Like Schaaffhausen, Huxley also thought that there were clear points of structural similarity between the Neanderthals and the racial traits of the so-called Aboriginal races. In his first analysis of the Neanderthal published in his essay "On Some Fossil Remains of Man," Huxley was convinced that the cranial capacity of the Neanderthal fell within the range of contemporary races:

> Under whatever aspect we view this cranium whether we regard its vertical depression the enormous thickness of its supraciliary ridges its sloping occipital or its long and straight squamosal suture we meet with ape like characters stamping it as the most pithecoid of human crania yet discovered. But Professor Schaaffhausen states that the cranium in its present condition holds 1033.24 cubic centimeters of water or about 63 cubic inches, and as the entire skull could hardly have held less than an additional 12 cubic inches, its capacity which may be estimated at about 75 cubic inches, which is the average capacity given by Morton for Polynesian and Hottentot skulls.[59]

Several years after this initial examination Huxley reaffirmed his beliefs on the similarity between the Neanderthal and certain races adding that:

> It has come to be generally admitted that [the Neanderthal's] remarkable cranium is no more than a strongly marked example of a type which occurs not only among other prehistoric men, but is met with, sporadically, among the moderns; and that, after all, I was not so wrong as I ought to have been, when I indicated such points of similarity among the skulls found in our river beds and among native races of Australia.[60]

Huxley, however, wavered in his understanding of racial traits within the skull. Clearly he thought that there were no consistent differences in the brain shape and size of

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[58] Ibid., pp. 163.
[59] Thomas Huxley, "On Some Fossil Remains of Man" (1863) in, *Man's Place in Nature and Other Anthropological Essay's* (New York: D. Appleton & Company, 1896), pg. 204.
[60] Thomas Huxley, "The Aryan Question" (1890) in, *Man's Place in Nature and Other Anthropological Essay's*, pg. 321.

population groups to suggest there were different human species. But, regarding the measurement of skeletal structures of the crania, Huxley was tentatively optimistic that the current methods of analysis could yield reliable data about race specific features. In his view, more data from human skulls coupled with novel innovations in the measurement of their various facial angles were needed to provide a "safe basis for that ethnological craniology which aspires to give the anatomical characters of the crania of the difference Races of Mankind."[61]

Thus in their study of the Neanderthal we can see that there were inconsistencies in the way nineteenth-century naturalists thought of the existence of racial traits. The writings of Schaaffhausen and Huxley reveal that evolutionists came to terms with the "humanity" of the Neanderthal by observing this ancient fossil through the lens of race and non-evolutionary assumptions about population specific characteristics. If there were no consistent features that divided mankind into clearly set groups, as Darwin claimed, then logically speaking evolutionists should have avoided the use of ethnological data suggesting the possibility of "racialized skulls." In other words, there were no grounds to assume that an analysis of an Aboriginal skull would be more informative about the link between humans and Neanderthals than an analysis of a European skull. Yet identifiable cranial traits *were* taken to be the defining characteristics of the various stages of human development that helped evolutionists place the Neanderthal on the lower end of what was assumed to be a gradual progression toward the cultural achievement and biological constitution of the European. In fact, Huxley wrote:

> Though truly the most pithecoid of known human skulls the Neanderthal cranium is by no means so isolated as it appears to be at first but forms in reality the

[61] Thomas Huxley, "On Some Fossil Remains of Man" (1863) in, *Man's Place in Nature and Other Anthropological Essay's*, pg. 199.

> extreme form of a series leading gradually from it to the highest and best developed of human crania. On the one hand, it is closely approached by the flattened Australian skulls of which […] lead us gradually up to skulls having very much the type of the Engis cranium.[62]

Racial differences that should have been inconsequential—by virtue of Darwin's and Huxley's refutation of speciation—actually proved essential when the lifespan of human beings were placed into a linear view of evolution from the Neanderthal and the most "primitive" of the existing races to the European.

If humans evolved along various stages, as the evolutionists assumed, and the "primitive races" functioned as stand-ins for the "missing link" between humans and the animal world, then it was also assumed that these various stages were marked with discernable characteristics. In this non-evolutionary framework, naturalists made the mistake of viewing the various traits of the human skull as a marker of both race and the hierarchal stages of human advancement. This understanding of human diversity was closer to the static view of nature and the philosophy of the great chain of being defended by natural theologians during the 17th and 18th centuries than the open-ended view of evolution and the renunciation of human speciation implied by Darwin in the *Origin of Species* and the *Descent of Man*. When thinking about the relationship between current humans and the Neanderthal, nineteenth-century evolutionists paradoxically affirmed the existence of race specific traits indicative of the evolutionary stages of human development, while also maintaining that the differences between members of the same race were too great to believe, as Darwin claimed, "any character [could] be named which is distinctive of a race and is constant." As we will see below, a novel form of this paradox has reiterated itself in the 21st century encounter with the Neanderthal genome.

[62] Ibid., pg. 205.

Discovering the bit of Neanderthal in All of us

When the Neanderthal Genome Project was initiated in 2006 at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, the consortium of researchers involved did not set out to discover how Neanderthal genetics would bear on scientific conceptions of race. After obtaining the first viable and complete genomic sequence of the Neanderthal, researchers were initially interested in locating potential regions where humans have diverged from Neanderthals genetically since sharing an ancestor around 500,000 years ago.[63] Humans are not the direct descents of Neanderthals, contrary to many of the nineteenth-century speculations. Rather Neanderthals are more of a "sister group to modern humans."[64] According to the current fossil record it is estimated that the Neanderthals died out 30,000 years ago. However paleoanthropologists have long speculated that following "the out of Africa event"—where some of the first wave of humans left the mother continent and spread into Asia and Europe—Neanderthals and humans came into contact in the Middle East at least 80,000 years ago and then later again in Eurasia around 40,000 years ago.

With humans and Neanderthals taking separate evolutionary paths a half a million years ago, the Neanderthal Genome Project believed a Neanderthal genome sequence would provide "a catalog of changes that have become fixed or have risen to high frequency in modern humans during the last few hundred thousand years" and would be "informative for identifying genes affected by positive selection since humans diverged

[63] Richard Green, *et al* "A Draft Sequence of the Neanderthal Genome" in, *Science* Vol. 328, May 2010, pp. 717.
[64] Interview with Professor "X" of the Neanderthal Genome Project on September 18, 2010.

from Neanderthals."[65] According to this genealogical reasoning, humans will possess traits that don't appear in Neanderthals since the two groups pursued separate genetic paths around 500,000 years ago. At the same time, humans and Neanderthals share traits by virtue of being descendant from a common ancestor.

Paleoanthropologists have been divided over whether or not the morphological similarities between present day humans and Neanderthals is evidence of interbreeding or is simply a remainder of the common ancestry shared between both groups.[66] Comparative studies of the mitochondrial DNA (mtDNA)—a separate and limited cache of genetic material sitting on the outside, rather than the nucleus of a cell, where DNA is stored—of both groups have found no links between present day humans and Neanderthals. The reason is that typically mtDNA is species specific, which means that humans possess a range of mtDNA found exclusively in our species.

However, using high-throughput sequencing geneticists were able to look at segments of DNA located within the nucleus of Neanderthal cells and not simply the mitochondrial DNA. The Project was able to sequence approximately 4 billion base pairs of the Neanderthal genome.[67] This was a significant step forward as the nuclear genome is made up of millions of genetic base pairs that evolve in rapid and novel ways, unlike mitochondrial DNA (mtDNA). The Project drew DNA samples from three Neanderthal fossils found from Vindija Cave in Croatia. Two of the fossils were dated to 38,000 and 44,000 years old respectively. Geneticists were unable to date the third bone, due to a collagen deficiency, although the layer of sediment in which the fossil was found was

[65] Richard Green, *et al* "A Draft Sequence of the Neanderthal Genome", pp. 710.
[66] Ibid., pp. 710.
[67] Ibid., pp. 711.

older than 38,000 years.[68] All three samples were thought to belong to three separate women—although two possibly share a maternal ancestor. To confirm their relative genetic similarity with other Neanderthals, the genomes of the Vindija Cave fossils were compared with the genetic sequences of the Neanderthal fossils found in El Sidron in Asturias, Spain (dated 49,000 years B.P), Mezmaiskaya Cave in Caucasus, Russia (dated 60,000 to 70,000 years B.P), as well as with the famous fossil discovered by Fulhrott and Shaaffhausen in 1856 at the Feldhofer Cave in Neander Valley of Germany (dated 42,000 years B.P.). Despite the geographical range and age differences of the six fossils, the Project found that when compared to the human reference genome (a template for the range of human genetic variation) all of the fossils were equally similar to present day human DNA.[69] According to the Project this meant that discoveries of genetic similarity between the Vindija fossils and present-day humans would allow the Project to make generalizations regarding the proximity of all Neanderthals to the human species.

In light of our common ancestry researchers knew ahead of time that present day humans share single-nucleotide polymorphisms (SNPs) with Neanderthals. Geneticists from the Project, thus needed then to distinguish between genetic overlap due to shared ancestry and places in the genome where genetic similarity was caused by direct gene flow. To make this distinction the Project compared the genomes of the chimpanzee—which humans last shared an ancestor between 6-8 million years ago—and the Neanderthal with that of the human reference genome.[70] Doing this allowed them to locate regions of the human genome that possessed alleles not found in Neanderthals or chimpanzees, and were thus sites where humans evolved after breaking away from both

[68] Ibid., pp. 711.
[69] Ibid., pp. 713.
[70] Ibid., pp. 717.

groups.[71] As a result the Project discovered 212 regions of the human genome where it appeared that humans had developed novel mutations as a result of natural selection following their divergence from Neanderthals. Interestingly, in the top 20 regions where natural selection is thought to have occurred, the Project found alleles located near genetic regions associated with Autism, Down syndrome, Schizophrenia, and diabetes.[72] The Project concluded that following our genetic divergence from the ancestor we share with Neanderthals, humans underwent a process of natural selection that resulted in the development of cognitive and metabolic processes possibly associated with disease.

In addition to locating genetic sites where humans and Neanderthals differ, researchers also weighed in on a longstanding debate between paleoanthropologists and comparative anatomists over whether modern humans and Neanderthals inter-mated. At this point human population differences due to continental ancestry proved instrumental for determining an answer.

The NGP deployed two interrelated methods for detecting Neanderthal admixture within present day humans. They first conducted a haploid analysis of human DNA sequences in search of Neanderthal genetic markers. Geneticists were looking for Neanderthal DNA that would have been passed along to present day humans by only one parental line (haploid).[73] Doing this increased the chances of actually detecting a Neanderthal "signal," as this method doesn't require having both parents at some point within their test subject's ancestry to be carriers of Neanderthal DNA. To obtain haploid human sequences, NGP researchers studied the human genome reference sequence and focused their attention on an anonymous admixed individual referred to as "RPCI11"

[71] Ibid., pp. 716.
[72] Ibid., pp. 717.
[73] Ibid., pp. 718.

who has contributed to 2/3 of the total variants collected in the sequence.[74] RPCI11 was of particular interest for NPG researchers because this individual is thought to have 50% European and 50% African ancestry. Studying the variants in this single individual the NGP were able to use RPCI11 as a population representative for both African and non-African populations in the search for Neanderthal DNA. NGP researchers looked at 2825 segments in the human reference genome thought to be of African ancestry and 2797 segments thought to belong to European ancestry.[75] Researchers found that in the regions derived from European ancestry there were more matches with Neanderthal variations than what was found in the genomic regions with African ancestry.[76] In the minds of NGP researchers, this clustering of European and Neanderthal genetic matches was "consistent with the notion that some genomic segments were exchanged between Neanderthals and non-Africans."[77]

To have a more robust understanding of the pervasiveness of Neanderthal admixture within modern humans NGP researchers compared the variants of present day humans with that of the Neanderthal. The NGP sequenced the genomes of two individuals from China, France, Papua New Guinea, South Africa, and West Africa. Their comparative analysis started with the genetic regions in non-Africans where they are assumed to be the most different from Africans.[78] Given the findings of the previous test NGP researchers assumed Neanderthals variants were most likely to be found in the genetic regions of their population subjects which are most non-African. With this in mind NGP researchers looked at a total of 1.2 million SNPs from the various individuals

[74] Ibid., pp. 718.
[75] Ibid., pp. 720.
[76] Ibid., pp. 719.
[77] Ibid., pp. 719.
[78] Ibid., pp. 720.

sampled in the study. Working through these SNPs they were able to pinpoint 13 genomic regions most likely to contain Neanderthal ancestry. Within these genomic regions researchers were able to differentiate African from non-African SNPs.

If gene flow from Neanderthals to humans occurred in Africa before humans diverged into these four major groups in the study, then the SNPs from each of the present-day humans would match Neanderthal variants equally. To their surprise, the NGP found that the individuals from China, France, and Papua New Guinea shared more genetic variants with Neanderthals than did the Africans used in the sample. Descendents of Eurasian appeared to match Neanderthals in 10 of the 12 regions where they were also most different from Africans.[79] NGP researchers went on to estimate that non-African populations possess between 1-4% Neanderthal DNA.[80] By discovering that on average non-Africans shared more genetic traits with the Neanderthal than Africans, the Project also posited that gene flow from Neanderthals to modern humans likely occurred in the Middle East 100,000 year ago before migrating to Europe and Asia between 40,000 and 50,000 years ago.

Neanderthals and the Three Sons of Noah

The fact that humans and Neanderthals mated successfully means that there was enough genetic similarity between both groups to produce viable offspring. But does successfully procreation imply that Neanderthals were also human? There appears to be no clear or simple answer to this question largely because this distinction rests on how

[79] Ibid., pp. 720-721.
[80] Ibid., pp. 721.

one defines what it means to belong to our species. [81] Here we are stepping into philosophical territory where statistical representations of Neanderthal admixture in humans clarify as much as complicate the issue. At a genetic level, the discovery of Neanderthal admixture poses a unique problem for sorting Neanderthals and humans into separate groups. This is because Neanderthal variation, according to the NGP, appears to fall within the range of acknowledged *human* genetic variation. In other words, the Neanderthal genome is not consistently different from the human genome. This is true not simply because we shared an ancestor 500,000 years ago but also because of the gene flow that occurred between some humans and Neanderthals. Relatively recent procreation has made it such that in certain parts of their genome, Asian and European populations share more genetic variation with the Neanderthal than they do with African populations.[82] In these sites, we might say non-Africans are more Neanderthal than they are African. But this certainly does not make Asians and Europeans any less human due to the sum total of genetic information shared with Africans. Interestingly the same can be said about Neanderthals. In certain locations of their genome, Neanderthals are identical to Asian and Europeans and thus equally distant from Africans. Couple this with their shared ancestry with humans a half-million years ago and one could make a strong case on genetic grounds that Neanderthals are also human. Its as though the Neanderthal is one of Noah's lost sons.

However, some geneticists would argue that all of this speculation about the genetic similarity and distance of Neanderthals to certain human populations is precisely that. Since its inception as a method of analysis, many geneticists have been critical of

[81] Interview with Professor "X" of the Neanderthal Genome Project on November 18, 2010.
[82] Interview with Professor "X" of the Neanderthal Genome Project on November 18, 2010.

admixture technology and the attempt to infer the genetic ancestry of a population based upon the collection of population specific SNPs. The grounds for this criticism have revolved around what some geneticists have described as the failure of scientists interested in human difference to distinguish their study of population ancestry from nineteenth-century typological discourses of race.[83]

Population geneticists Kenneth M. Weiss and Jeffrey C. Long, as well as computational biologist Brian W. Lambert have been some of the most recent voices of opposition toward admixture technology and the use of computer software programs to calculate human ancestry. They have argued that contemporary geneticists inadvertently fall back onto racial typologies when they divide humans according to continental regions where specific genetic variations are assumed to have come into being. This has the effect of collapsing genetic ancestry due to gene flow with genetic ancestry due to environmental factors that cause alleles to rise in frequency. They affirm a view shared by other scientists that genetic and historical ancestry represent two different phenomenon.[84] The former identifies a hypothesized continental origin based upon a carefully selected catalogue of what are believed to be a population-specific frequency of traits. Whereas the latter entails the lived experience of migration, mating, cultural and environmental pressures that might cause a variant to rise in frequency within isolated populations who have not procreated.

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[83] Kenneth M. Weiss and Brian W. Lambert, "Does History Matter?: Do the Facts of Human Variation Package our Views or do Our Views Package the Facts?" in, *Evolutionary Anthropology* May—June 2010, Vol. 19, No. 3, pp. 97.

[84] Weiss and Long, "Non-Darwinian Estimation: My Ancestors, My Genes' Ancestors", pp. 706; Weiss and Lambert, "Does History Matter?: Do the Facts of Human Variation Package our Views or do Our Views Package the Facts?", pp. 97; Deborah Bolnick, "Individual Ancestry Inference and the Reification of Race as Biological Phenomenon" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, pp. 80-82.

According to Weiss and others, the trouble with admixture estimates is that the parental populations from which contemporary admixed individuals are thought to have descended are not alive to be sampled for the actual "parental" genetic markers.[85] Geneticists attempt to resolve this problem by sampling from contemporary populations, which then function as surrogates for the assumed parental groups in each continental region of interest.[86] Weiss and Lambert claim that this hypothetical representation of the origins of human diversity would be fine as a heuristic if it were not for the obvious fact that when the estimated parental populations are analyzed among themselves their intra-group differences are as great and in some instances greater than inter-group comparisons.[87] Weiss, Long and other geneticists stress that the existence of intra-group variation is indicative of the fact that the *lived ancestry* of a population is at the same time more gradual and more precarious than the end result of laboratory studies that model human genetic ancestry. But in an effort to render this otherwise complex lived biological history quantitatively, they argue that geneticists who employ admixture technology assume that the parental populations of present-day admixed individuals were homogenous carriers of the particular set of traits researchers have inferred—based upon contemporary samples—to have existed at some time in the past. According to Weiss and Long:

> Whether the investigator uses external information or makes estimates from the samples at hand, the parental populations are abstractions that conform to only the simplest kind of genetic structure. This structure places heavy emphasis on the idea that the world once harbored distinct and independently evolved populations that have now undergone admixture of an unstated type (often seeming to connote

[85] Weiss and Long, "Non-Darwinian Estimation: My Ancestors, My Genes' Ancestors", pp. 706; Weiss and Lambert, "Does History Matter?: Do the Facts of Human Variation Package our Views or do Our Views Package the Facts?", pp. 97
[86] Ibid., pp. 95.
[87] Ibid., pp. 95.

> admixture due to colonial era migrations). The ideal markers for this kind of analysis are private to, and in high frequency in, only one of the putative parental populations, or at least display major differences in frequency among the putative parental populations.

Of course not every SNP or genetic variation can be used to infer the unique ancestry of a population. Thus geneticists have to be discerning in their selection of variants to infer the genetic makeup of a parental population. Genetic variants in high frequency tend to be prime candidates. However Weiss and Long add that exclusive SNPs that have reached a high frequency within one population are rare because genes shared widely within a group are mostly old, having been derived from a shared ancestor or been obtained through gene flow from other populations already in possession of this trait. They argue that variants widely prevalent in a population say more about the geographical conditions that forced certain alleles into high frequency than reveal a moment of unique population differentiation.[88] In their view, models for the frequency of a trait in one population compared to another actually explain the relative rates of possessing an allele shared with other groups not necessarily the origin or exclusiveness of a genetic variant.

Nevertheless allele frequencies are still understood by some geneticists as indicative of ancestry and population differentiation, even though "most structure-like analyses use markers that were discovered in modest- size samples from only a few populations (mainly, Europe, West Sub-Saharan Africa, and East Asia), and registered in databases such as dbSNP (www.ncbi.nlm.nih.gov/projects/SNP/) or HapMap (www.hapmap.org) whose markers are intended primarily for gene mapping. How

[88] Kenneth M. Weiss and Jeffrey C. Long, "Non-Darwinian Estimation: My Ancestors, My Genes' Ancestors" in, *Genome Research* Vol. 19, 2009, pp. 705.

specific these markers are to a limited geographic region is often untested."[89] The result, according to many social scientists, is a picture of human ancestry with populations divided according continent specific traits, distilling human genetic diversity down to three or four essential groups much like the race discourses of 18th and nineteenth-century natural history.[90]

Are Racial Typologies here to Stay?

Thus there is some skepticism among scientists regarding the reliability of genetic ancestry and admixture estimates. Until the work of the NGP is reproduced in independent studies, the question of whether gene flow between humans and Neanderthals actually occurred will remain up for dispute. In the meantime, we might ask whether there is any truth to the suspicion of anthropologists and biologists about the parallels between contemporary constructions of population differences and the racial typologies of the nineteenth-century.

It certainly seems to be the case that in both centuries scientists were led to reconstruct imagined continental communities fit with unique traits now found in present-day humans. These varying traits were assumed to be homogenous within the parental populations of each present day group of interest. In the twenty first-century this involved using genetic traits found within present day Europeans, Africans, and Asians that were thought to belong in some pure form within the parental populations of these groups. In

[89] Ibid., pp. 705.
[90] Weiss and Long, "Non-Darwinian Estimation: My Ancestors, My Genes' Ancestors", pp. 706; Weiss and Lambert, "Does History Matter?: Do the Facts of Human Variation Package our Views or do Our Views Package the Facts?", pp. 97; Deborah Bolnick, "Individual Ancestry Inference and the Reification of Race as Biological Phenomenon" in, *Revisiting Race in a Genomic Age* ed., Keonig, Lee and Richardson, pp. 80-82.

the nineteenth-century evolutionists marked the varieties of mankind according to the cranial traits of Asian, North American, Australian, European and African populations. Moreover, scientists in both centuries used present day living groups to reconstruct and model the features of the ancestral populations from which they were assumed to have descended.

From this vantage point there is an undeniable symmetry between the use of racial traits by nineteenth-century naturalists and the use of population SNPs by contemporary geneticists. In the our present century, Africans, Asians, and Europeans were "typed" according to a set of SNPs thought to be indicative of some distant and genetically homogenous ancestral population for each of these groups. The Neanderthal was similarly typed. Both groups (humans and Neanderthals) were then matched according to their population specific traits. In the nineteenth-century, each of the five major races acknowledged at the time (American, African, European, Malay, and Mongolian) were divided according to the shape and features of their crania, assuming these traits were uniform and persistent across each race. Once there was agreement over the novelty of the Neanderthal crania, nineteenth-century naturalists were able to clarify the evolutionary links between the skulls of contemporary races and this ancient human type. Any honest nineteenth-century anatomist could discern that the remains found in the Kleine Feldhofer Grotte in the Neander Valley were not a cave bear and with nearly 500,000 years since sharing an ancestor it was not surprising to contemporary geneticists that Neanderthals had clearly developed genetic and amino acid novelties that rendered aspects of their genome distinct from all modern humans. These observations about overall human and Neanderthal similarity were made through relatively unadorned

empirical and deductive reasoning. Yet when it came to figuring out the relationship between Neanderthals and particular human groups, scientists in both centuries employed forms of reasoning that appear typological.

Warwick Anderson's modification of the concept "boundary object" is helpful in my effort to describe how race was similarity constructed in the nineteenth and twenty first-century encounters with the Neanderthal. In his discussion of the social effects of "whiteness" as an itinerant transnational category, Anderson employs the term *boundary subject* "as a position for negotiating or asserting affinity and difference."[91] Boundary subjects are mutable and flexible placeholders that reinforce prevailing notions of human difference. The Neanderthals appear to have functioned as a sort of boundary subject not simply in the way they have strengthened notions of race, but also because as an extinct population, with no voice or reality beyond what we are willing to recognize, their existence and meaning has been contingent upon the needs and interests of our scientific and societal imagination—much like an empty signifier. After they were properly understood as a ancient human type in the nineteenth-century—and not simply pathological individuals—knowledge of Neanderthal traits allowed naturalists to reaffirm the divisions between the savage and evolved races. In the 21st century unlocking the secrets of the Neanderthal genome has had the effect of sharpening the distinction between the African and the non-African while at the same time breathing new life into long held beliefs about the direct relationship between race and genetics. To be clear, likening the Neanderthal to a boundary subject is not to suggest that contemporary scientists have intentionally sought to reify population boundaries. Rather I am describing

[91] Warwick Anderson, "Traveling White" in, *Re-Orienting Whiteness* ed., Boucher, Carey, Ellinghaus (New York: Palgrave Macmillan, 2009), pp. 65.

how scientific knowledge exists within an often-unacknowledged porous relationship with society and thus fulfills social needs that may not be the explicit concern of researchers. Indeed, the public reaction to this discovery provides an opportunity to see how unlocking the Neanderthal genome has reconfigured and reinforced prevailing notions of racial difference.

Public Perceptions of Neanderthal Admixture

Given the Neanderthal admixture discovery it is entirely reasonable for some to make the argument that what makes someone European and not African is their possession of Neanderthal ancestry. According to the evolutionary timeline proposed by the NGP, humans and Neanderthals mated before humans diversified into the populations with us today. This means that Neanderthal variants can function as Ancestry Informative Markers (AIMs) for all non-Africans. To put this crudely, what makes one Asian and not African could potentially be construed in terms of whether or not 1-4% of your genome contains the vestiges of an extinct population. When asked whether Neanderthal variation could be used to distinguish an African from an Asian within a blind study, one researcher on the NGP explained to me that not only was this possible but that the NGP initially considered using Neanderthal SNPs to trace European and Asian ancestry, but these plans were abandoned for reasons that were undisclosed.[92] This researcher went on to explain, however, that after contacting a popular commercial DNA testing company interested in ancestry, plans are underway to market Neanderthal SNPs for consumer recreational genetics.

[92] Interview with Professor "X" of the Neanderthal Genome Project on November 18, 2010.

One wonders with the rush to make Neanderthal SNPs available for consumer DNA testing if NGP researchers aren't putting the cart before the horse. If gene flow between humans and Neanderthals turns out be verified by subsequent studies, it still remains an open question of whether or not the more than 1 million Neanderthal SNPs introduced into the European and Asian gene pool has provided any cognitive or metabolic advantages (or disadvantages) to these groups. That is, are these Neanderthal genes "doing" anything—for better or worse? In our current bio-political setting where public protection against genetic discrimination from employers and insurance companies has increasingly become necessary, one would think that NGP researchers would give more thought to the possible public health implications of their study before making Neanderthal SNPs available to genetic ancestry companies and consumers. Perhaps this lapse in foresight is due to the lack of consensus among NGP researchers about the biological consequences of Neanderthals variants in modern humans. Researchers involved in the NGP actually appear divided on this question. According to one researcher, the amount of Neanderthal DNA within present day humans is too random to be significant. In fact this researcher explained that:

> People when they hear this 1 to 4% [Neanderthal genes] in European and Asian populations think that there is this *defined* 1-4% of the genome that is set there and fixed, and everyone that you look at who is European and Asian within that 1-4% of the genome has Neanderthal ancestry. That is *not* the case at all. It is a different 1-4% in everybody. It's like if you had a glass of water [representing] the gene pool at some time in the past and you were to add food coloring that is 1-4% of the total volume of this water and you drop it into the glass and it gets mixed in there […] Whenever you take a sample out of this water it will contain 1-4% food coloring. But the individual molecules will be different across any sample of water you take out. [Neanderthal genes] are thoroughly mixed and dilute within the gene pool. [Neanderthal genes] are in different regions of the genome for everybody.[93]

[93] Interview with Professor "X" of the Neanderthal Genome Project on November 18, 2010.

But not all NGP researchers are of the mind that the Neanderthal SNPs randomly scattered in present humans is biologically inconsequential. On a separate occasion one researcher explained to me that the introduction of over 1 million unique SNPs into the human gene pool was sure to be "significant" and that the more exciting research ahead involves determining precisely the consequences of this novel variation within the human genome.[94] In fact finding an answer to this question is currently the next step for researchers directly involved with the NGP, as well as non-affiliated scientists interested in public health and behavioral research.

With Neanderthal SNPs soon in to be in the market place and the potential health and behavioral ramifications of Neanderthal admixture within non-Africans yet to be determined, the societal implications of the NGP's claim about gene-flow between humans and Neanderthals will be interesting for countries like the U.S. given the state of American scientific literacy and the consistent religious opposition to evolutionary claims about human origins, development and change. In 2009 the Pew Research Study found that 61% believe that evolution has occurred which is much lower than the 87% of scientists who hold this position.[95] When you look at the general public more carefully an interesting statistic emerges: only 32% of Americans believe in evolution by random natural selection; i.e., not guided by God.[96] This is almost the same percentage of Americans (31%) who outright reject evolution and believe that living things have

[94] Interview with Professor "Y" of the Neanderthal Genome Project on October 20, 2010.
[95] David Masci "Public Opinion on Religion and Science in the United States" from Pew Research Center for the People & the Press surveys, *accessed on the web on November 5 2009 at* http://pewforum.org/Science-and-Bioethics/Public-Opinion-on-Religion-and-Science-in-the-United-States.aspx
[96] Ibid.

existed in their present form since the beginning of time. Americans who believe the latter are populated predominately by Evangelical Protestants and weekly churchgoers. To put these statistics in different terms, over half of Americans (68%) do not fully believe in evolution. This data suggests that Darwinian evolution by random natural selection is still not a widely accepted paradigm for viewing the existence of life on earth and appears to conflict with deeply held beliefs about the order and purpose of the natural world.

Biblical narratives such as the story of Noah's three sons and the tower of Babel saga have been a part of the cultural fabric of Western views about human origins and have provided Westerners with a framework for viewing race in terms of parent populations from which present-day humans have descended. Given this, genetic theories that cast humans into three original groups can be easily assimilated into Christian creation narratives that have also explained human diversity in terms of original parental populations (i.e., the three sons of Noah). The question is how prevalent are these Christian views of human origins within the U.S. given that the majority of Americans reject evolution? And to what extent do they filter lay understandings of scientific claims about human evolution and race?

Surveying American bloggers shortly after the Neanderthal Genome discovery was announced I found that Christian Creationist bloggers were critical of the recent discovery of Neanderthal ancestry within our genome. Many outright rejected the evolutionary implications of this scientific breakthrough as several Creationists claim, almost ironically, that evolutionary theory prevents scientists from recognizing the full

humanity of the Neanderthals.[97] Some Creationists contended that anthropologists have fabricated the very idea of the Neanderthal; deliberately mixing the fossil remains of an ancient human with primates in order to justify the evolutionary belief in a creature not quite animal nor fully human.[98] Creationists have insisted that our recent genetic ties to the Neanderthal should force us to abandon scientific theories that claim humans have genetic material that make them a "new" and separate species from other so-called ancestral hominids.[99]

Among other social conservatives the detection of genetic admixture between Neanderthals and modern humans has reinforced public ideas about the relationship between commonsense perceptions of race and genetics. A number of social conservatives have played up the fact that Europeans, rather than Africans, possess Neanderthal DNA. A majority of bloggers on the white supremacist website Stormfront.org congratulated themselves for their genetic uniqueness and claimed Neanderthal DNA was responsible for the "intellectual supremacy" and "physical prowess" of Europeans. Several even shared the sentiment conveyed by an anonymous blogger who suggested that:

> [As] Neanderthal genes become more inundated with other racial mixes we have been evolving back wards [sic]. It may be that in a few hundred years so little will

[97] See Ian Juby's blog entry "whadya know: Neanderthals are human!" in the *Creation Science Newsletter*, May 6, 2010: http://ianjuby.org/newsletter/?p=360.
[98] For a more thorough understanding of the Creationist critique of evolutionary theory and belief in the existence of the Neanderthal see the thought of Sean D. Pitman in, *The Evolution of Early Man* October 2005: http://www.detectingdesign.com/earlyman.html#Table%20of%20Contents. Also see Ian Juby's blog entry, " 'The Evolution of evolution': a response to the January 2009 Scientific American": http://ianjuby.org/jan2009sciam2.html#pedigree.
[99] See Sean D. Pitmann, "Neanderthal" in, *The Evolution of Early Man* October 2005: http://www.detectingdesign.com/earlyman.html#Neanderthal.

> remain of these genes that we will be inseparable from the lower form of human (i.e. blacks).[100]

Interestingly, white supremacists have understood their genetic bond with the Neanderthal—demonized at the turn of the 20th century as primitive, culture-less cannibals[101]—as a mark of lauded genetic distinction and biological superiority. We can see here how the idea that human life began in Africa doesn't preclude beliefs about the biological inferiority of present day African populations.

Listeners' reaction to NPR's coverage of the Neanderthal Genome Project were a bit more measured, but inevitably concerns similar to those expressed by the Creationists and Stormfront bloggers were peppered throughout the discussion. [102] One anonymous listener was concerned by the lack of attention given to "the six day creation model and how it better answers the questions of our origin than evolution." Others shared his reaction that pro-evolutionists have "the political power" to "suppress any discussion of an alternative model." Creative efforts were also made to rethink the Genesis creation story in light of this new finding, as one listener suggested that perhaps:

> Adam and Eve were the first cognizant humans, their two offspring were Neandethal son Abel and Modern or Cro Magnan son Cain. Abel the hunter, Cain the planter. And Cain killed off his brother Abel. It's a terrible story of why there are no Neanderthals today.[103]

Several listeners speculated that the Neanderthal genome was possibly responsible for the "red hair", "blue eyes" "stocky stature, long torso" and other phenotypes expressed

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[100] See Stromfront thread, "How there's a bit of Neanderthal in all of us: DNA link to cavemen revealed" May 6, 2010: http://www.stormfront.org/forum/t706174/.
[101] Friedemann Schrenk and Stephanie Muller, *The Neanderthals* pp. 12-21.
[102] See the public thread from *On Point* with Tom Ashbrook, "Neanderthals: Our Kissing Cousins?" May 13, 2010 http://www.onpointradio.org/2010/05/neanderthals-our-kissing
[103] Ibid.

exclusively by "whites." Another listener interested in the implications this discovery has for thinking about racial differences claimed that:

> [The fact that] Neanderthal genes are distributed globally yet not much among African people hints at the possibility of a genetic explanation for racism. Perhaps over time, Neanderthal genes made their carriers wary and fearful of hominids who looked unlike them and shared fewer of those genes. After all, it seems that anti-black feelings run deepest in Eurasia, where the Neanderthal carriers ended up.[104]

It appears that a surprising number of Americans hold views about the existence of racial types that were prevalent among Christians and many naturalists during the nineteenth-century. Given these public reactions it seems that knowledge of the interbreeding between humans and Neanderthals has reinforced the belief that there are deep biological differences between groups that can be discussed original racial types. It seems that not only have religious ideas potentially contributed to belief in permanent differences between populations but also that the public has fallen victim to the conceptual slippage of thinking in terms of racial typologies. It also appears that discussions about the Neanderthal genome animate concerns about racial difference and religious claims about human origins. This goes to show that science, religious belief, and ideas about race share a deep and unspoken bond, which becomes apparent when knowledge about the uniqueness of our species is called into question.

[104] Ibid.

Conclusion

Beyond the Religious Pursuit of Race?

Throughout this work I have shown how naturalists and scientists have inherited a series of framing concepts derived from Christianity in their discussion of human origins and race. This has been true even in intellectual settings noted for the assumed liberation of science from cultural and other social forms. My central claim has been that religious ideas about human origins have facilitated the development of modern scientific views of race. I have attempted to demonstrated how present-day scientific views of race have been built upon antecedent religious ideas. The philosopher of science Ludwig Fleck argued in the 1930's—during a time when the autonomy and authority of science became prominent in Europe and the US—that revealing the link between ideas of the past and present was one of the central challenges for intellectual historians interested in scientific epistemology. Fleck asked if we could "blandly ignore the fact that many scientific positions steadily developed from proto-ideas, which at the time were not based upon the type of proof considered valid today? This question should be reflected upon and investigated"[1] *The Religious Pursuit of Race* actively responds to Fleck's challenge and has attempted to show how the religious ideas of the past are a part of the conceptual ancestry of present-day scientific views of racial difference.

What is to be gained from this perspective? By showing the connections between Christian thought and scientific racial thinking my hope has been to go beyond the pervasive conflict thesis regarding science and religion. In the United States it seems almost second nature for us to believe that science and religion inhabit separate

[1] Ludwig Fleck, *Genesis and Development of a Scientific Fact*, (Chicago: The University of Chicago Press, 1981[1935]), pp. 24-25.

intellectual spaces, or constitute what cultural anthropologist Neha Vora has called, in a different context, "domaining practices."[2] According to a 2009 Pew Research Study Poll, half of Americans, roughly 55%, believe science and religion are at odds and belong to separate spaces within modern life. And 64% of Americans claim that they would maintain a religious belief in the face of counter-scientific evidence.[3] This tension plays itself out in the highly publicized debates over climate change, stem cell research, science education, and genetic enhancement technologies.

The idea that science and religion have been locked in perpetual tension is part of an enduring myth developed by the American historians John Draper and Andrew Dixon White at the end of the nineteenth-century.[4] In what was called the "Draper-White thesis," conflict between religion and science became an established conceptual paradigm for most twentieth-century secular historians who defended the importance of free scientific inquiry over and against the influence of religion.[5] Historians and philosophers since the 1970s have steadily rejected the Draper and White thesis and have maintained that the history of science in the West is too complex to affirm meta-narratives that posit science and religion to be constant adversaries.[6]

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[2] Neha Vora, "Producing Diasporas and Globalization: Indian Middle Class Migrants in Dubai" *Anthropological Quarterly*, 2008, 81:2, pp. 377-406.
[3] David Masci "Public Opinion on Religion and Science in the United States" from Pew Research Center for the People & the Press surveys, accessed on the web on November 5 2009 at http://pewforum.org/Science-and-Bioethics/Public-Opinion-on-Religion-and-Science-in-the-United-States.aspx
[4] Colin A. Russell, "The Conflict of Science and Religion" in, *Science and Religion: A Historical Introduction* (Baltimore: Johns Hopkins University Press, 2002), p. 3-12.
[5] David B. Wilson, "The Historiography of Science and Religion" in, *Science and Religion: A Historical Introduction* (2002), p. 13-30.
[6] David C. Lindberg and Ronald Numbers, "Beyond War and Peace: A Reappraisal of the Encounter between Christianity and Science" in, *Perspectives on Science and Christian Faith* Vol. 39 (1987), p. 140-145; John Hedley Brooke, "Interaction between Science and Religion: Some Preliminary Considerations" in, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge University Press, 1991), p. 16-51.

In this dissertation I have attempted to bring the history of scientific thinking about race into these critical discussions that expose the limits of the "conflict thesis." There are clear problems with viewing the study of race as a purely a scientific issue. Firstly, this view distorts the history of how contemporary visions of race came into being through the steady influence of religious concepts on scientific assumptions. We saw this, for example, in chapter one where I showed how the contemporary literature on the racial theories of Friedrich Blumenbach have overlooked the influence of Christian ideas of common human descent, unique human creation, and recent human origins had on Blumenbach's thinking. Although he was instrumental in establishing anthropology as a separate "scientific" discipline of study, this did not mean that Blumenbach outright rejected the habitual modes of thinking and religious assumptions that were a part of more explicitly Christian discussions of human descent. I argue that Blumenbach was more of a Lutheran on the question of race than many historians of science have realized.

Adopting the conflict thesis for viewing the history of modern racial science is limiting in another important respect. By investing in the notion that science and religion are inherently at odds we fail to grasp one of the central "truths" about race bestowed to modern science by Christian thought: the relationship between those who look similar and different from ourselves is an enduring human existential dilemma not merely a scientific problem. The anthropologist Jonathan Marks echoed this sentiment in his account of *What it Means to be 98% Chimpanzee* when he wrote "sameness/otherness is a philosophical paradox that is resolved by argument, not by data."[7] Insofar as race is an existential concern its resolution has ethical and political implications. This is to say that

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[7] Jonathan Marks, *What it Means to be 98% Chimpanzee: Apes, People, and Their Genes* (Berkeley: UC Press, 2002), pp. 22.

scientific claims about human difference have social implications that are not simply consequences of science but are part and parcel to scientific discourse itself. Humans are the only species that actively give meaning to their life-worlds. The scientific study of our origins is an example of this meaning making process. Racial differences are not simply facts given to us by nature but become meaningful through the framing concepts, assumptions, and methodologies used by scientific actors who are situated within specific historical and cultural settings. In his commentaries on the 1951 UNESCO Statements on Race the British-American anthropologist Ashley Montagu captured the importance of recognizing the role that human assumptions play in the perception of racial differences. Montagu wrote:

> We perceive the consequences of different histories of biological experience in the races of today. Now, unfortunately what we see, what we per-ceive (*per* = by, through, *capere* = to take), is largely based on the kingdom that is within us. What we do with the objects of the outside world is to take them in and pass them through all that our experience, biological and social, has made us—the alembic of ourselves—and then judge them according to that experience. In short our perceptions come not from the objects we judge but from ourselves, and what we judge things to be depends not so much upon the things as upon what we ourselves are in terms of the history of our own past experience. That is why it is said that what we perceive is preconceived, for a perception is not a new sensation, a mere appearance reflecting reality, but it is a sensation which has been invested with meaning, a meaning entirely determined by our past experience.[8]

I take Montagu's point to be not a denial of objective reality, but an appreciation for how the objects we perceive are already mediated by our past experience and our cultural and social milieu. The relationship between ideas and the world outside the mind is a central problem of modern Western philosophy that has implications for the study of human difference. Montagu is providing a contemporary gloss on what Immanuel Kant, in the

[8] Ashley Montagu, *Statement on Race: An Extended Discussion in Plain Language of the UNESCO Statement by Experts on Race Problems* (New York: Henry Schuman, 1951), pp. 57.

Critique of Pure Reason, identified as the inability of human reason to capture, in its entirety, the essence of the objects and individuals we encounter. Kant warned that "we can have cognition of no object as a thing in itself, but only insofar as it is an object of sensible intuition, i.e. as an appearance."[9] There is, indeed, a world outside the mind. The problem is that our understanding of this world and those who inhabit it remains limited to how these things appear to us and are mediated by our experiences and our own modes of thinking. Following Montagu, we must realize that human differences are not simply the end result of the interaction of genes and environment, but also culture—particularly the cultural setting in which scientific work takes place. The meaning scientists attribute to human difference is a reflection of the social, political and cultural values they have internalized as historical subjects. Simply put, scientific perceptions of race are not value-free.

Thus thinking beyond the conflict thesis allows us to *humanize* the scientific study of race by drawing attention to the larger social, cultural, and religious concerns that have animated people's interest in human origins. Science participates in the search to bring closure to difficult existential questions about what it means it be human. Ashley Montagu put his finger on the uniquely human needs that rest behind the modern investment in racial classification when he wrote:

> [A] race is not something fixed, permanent, and unchanging or unchangeable, but […] is a dynamic, potentially unstable entity, which is seen to be stable only when one delimits the process of change at one's own time level. Seen at another time, at another period, in another century, another millennium, it may be a very different race, depending upon the kind of influences which have been operative upon it during the interval of elapsed time.[10]

[9] Immanuel Kant, "Preface" in, *Critique of Pure Reason* trans. Paul Guyer and Allen W. Wood (Cambridge: Cambridge University Press, 1998[1781]), pp. Bxxvi-Bxxvii.
[10] Montagu, *Statement on Race*, pp. 56.

Races are meaningful only if one reduces the human evolutionary timescale to the present. This is to say that the belief in racial distinctions, be they sanctioned by theology or science, are at best proximate answers for historically contingent interpretations of the importance and meaning of human life. We can easily lose sight of the fact that we are a constantly evolving species when we allow scientific or religious discourse to frame human diversity in terms of fixed and stable demarcations between human groups. This is to say that the need for enduring answers about what it means to be human, via notions of racial difference, can distort our self-understanding as a species. We are ultimately the product of evolutionary processes much older and enduring than the human timeline of existence—be it a timeline defined by the Bible or estimates of science.

Insofar as we believe human differences are rooted within our biology, the idea that races are "real" is also one of the last holdouts for the once explicitly Christian belief that the Creator has planted in Nature the secrets of our behavioral, health, and intellectual differences. It is a true paradox that the temptation to reduce human differences purely to biology and therefore "Nature" endures even though contemporary science has abandoned all references to the Creator as the first cause behind natural phenomena. In other words, contemporary science has given us race without God. This, however, has not meant a complete abandonment of religious forms of reasoning with regard to race. For example notions of common human origin and the perception of distinct racial traits remain integral to contemporary scientific discourse even though early modern Christian naturalists helped forge these ideas. Although scientific naturalism (i.e., the belief that natural phenomena can be explained without reference to the supernatural) was an important methodological shift within the development of

Western science, I have shown in this dissertation that religious concepts did continue to frame scientific views of race—particularly when pitched in biological terms.

On this point I disagree with Ronald L. Numbers' claim that adherence of scientists to methodological naturalism at the end of the nineteenth century marked the end of Christianity's influence over scientific thought.[11] In my view much depends on the "science" that one has in mind, as well as how closely one associates Christian thought with appeals to the supernatural. In this dissertation I have shown how actors within anthropology, medical science, and genetics were capable of translating into secular terms earlier religious ideas of human descent, human uniqueness, and racial diversification. In these secular translations these concepts played the same "framing" role as they did in more explicitly religious discussions of race. For example, Blumenbach's designation of the white Caucasian as the original human type was analogous to the idea that all human beings were descendants of the biblical Adam. Moreover, the biblical narrative of human creation and human descent remained valid for most scientists and lay thinkers well into the twentieth century even though biblical scholarship and historical criticism stripped away many of the supernatural elements of this narrative. The point here is that many of the "truths" of Christian ideas about race did not rest on appeals to the supernatural but on the ability of thinkers to show how notions such as common human origins were feasible given current scientific standards. The controversy over polygenism in the nineteenth century created by Josiah Nott is another illustration of this. In chapter two we saw that the root issue for most Christians was not the method by which Nott arrived at his theory of multiple human origins. Rather, Nott's

[11] For Number's position see: "Science without God: Natural Laws and Christian Beliefs" in, *When Science and Christianity Meet* ed. Lindberg and Numbers (Chicago: Chicago University Press, 2003), pp. 265-285.

hypothesis was problematic because of his denial of the notion of common human descent. The point here is that Christian ideas about race can be remarkably accommodating to scientific theories insofar as vestiges of the Christian creation narrative remain discernable to the religious public.

This raises important questions about our present context. As we saw in chapter four, the public reaction to the recent discovery that Neanderthal DNA exists in groups designated as "Asian" and "European" and not "African" gives new life to early modern religious ideas about three original human groups (Shem, Japheth, and Ham). In this case religious conceptions of human descent are kept alive implicitly within the public imagination even though this is not the explicit intention of scientific researchers. This is particularly true in the US, which remains predominantly Christian and continues to be one of the most religiously fervent nations in the West. As we saw in the 2009 Pew Survey discussed in chapter four, Darwinian evolution by random natural selection remains a difficult idea for many. Most Americans remain committed to the religious belief that there is an inherent order and purpose to the natural world. The prevalence of these non-Darwinian beliefs among the lay public has a great influence over present-day perceptions of races as being fixed rather than "dynamic, potentially unstable entities."[12]

As I showed in my discussion of race and disease during the social hygiene movement and the public reaction to the recent Neanderthal genome sequence, beliefs about fixed and naturally discrete human populations can be philosophically antithetical to Darwinian evolution. These beliefs, which have their root in early modern Christian thought, have the potential to foster the view that race is a stable biological reality. According to the 2009 Pew survey on public attitudes toward science (chapter four), most

[12] Montagu, *Statement on Race*, pp. 56.

Americans (68%) remain committed to the notion that "the Creator" is responsible for preserving the form and destiny of a species. One must question the extent to which these persistent religious beliefs have seasoned the public imagination to embrace, rather than question, the return of biological conceptions of race. Indeed, given its opposition to Darwinian evolution, a considerable section of the lay public has much in common with eighteenth and nineteenth century naturalist historians—the forbears of present-day scientists—who believed that races were stable and discrete biological entities. Rather than moving beyond racial thinking, contemporary scientific discussions of human biological difference might find common ground with a lay public who are skeptical of ideas based on evolution and sympathetic to notions of species fixity and an inherent natural order.

Ultimately, the complex connections between religion, race, and science in the West are easily overlooked when we view this history as one of conflict between these two knowledge domains and affirm that science and religion are philosophically at odds and therefore inhabit separate intellectual spaces within modern life. A more careful examination of this history reveals a something profoundly religious heritage at work in the ways modern thinkers in the West have studied and classified human beings.

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